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ABSTRACT

This 22-country survey was conducted between 1994 and 1998. Representative samples of adults aged 16-65 were interviewed and tested at home using the same literacy tests. The main purpose of the survey was to find out how well adults use information to function in society. Another aim was to investigate the factors that influence literacy proficiency and to compare these between countries. Ten international indicators are presented that allow readers to compare the literary proficiency of Americans with that of other populations as measured on the prose literary scale; similar results are provided in quantitative scales. The findings confirm how low literacy is an important issue in all regions in all countries surveyed. On the whole, the findings show that Americans are at an average level of prose literacy performance, behind the Nordic countries and the Netherlands but on a par with adults in Australia, Canada, and Germany. Literacy proficiency is more unequally distributed in the United States and Canada than in Europe, with the most literate 25% of North Americans scoring far higher than average. "Life-long" learning programs, as well as early childhood education, more access to adult education and to information and communication technologies, and the promotion of literacy-rich environments at work, home, and in the community are proposed as solutions to improve adult literacy. The paper is divided into 3 chapters, 4 annexes, and 10 data-rich figures. (Adjunct ERIC Clearinghouse for ESL Literacy Education) (KFT)

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International Adult Literacy Survey

Benchmarking Adult Literacy in America: An International Comparative Study

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The International Adult Literacy Survey was a 22-country initiative conducted between 1994 and 1998. The U.S. component of the survey was primarily funded by the United States Department of Education, National Center for Education Statistics. The Canadian component was primarily funded by Human Resources Development Canada, Applied Research Branch and National Literacy Secretariat.

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Note of Appreciation

Canada owes the success of its statistical system to the long-standing co-operation of Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

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Preface

The United States Department of Education has initiated and funded several large-scale surveys of reading comprehension and literacy proficiency among the adult population since the 1970s. The latest of these was the National Adult Literacy Survey (NALS), conducted between 1989 and 1992. These surveys have produced a wealth of data and new insights relevant to literacy policy and practice.

Whereas early previous studies treated literacy as a condition that adults either have or do not have, the important innovation introduced in more recent surveys has been to measure literacy proficiency along a continuum denoting how well adults use information to function in society. Thus, today, literacy is no longer defined in terms of an arbitrary standard of reading comprehension, distinguishing the few who completely fail the test (the "illiterates") from nearly all those growing up in America who reach a minimum threshold (those who are "literate").

This new approach led to a rethinking of the nature and magnitude of the literacy issues faced by America because the 1992 NALS data did not support the common belief that literacy difficulties beset only a tiny and marginal proportion of the population. Policy makers and researchers associated with the survey discovered that at least one in every four adults lacked the minimum literacy skills needed for coping with everyday life and work in a complex, information-dependent society.

This finding put literacy issues squarely back on the policy agenda. But new questions also began to be asked. Key among them was whether the profiles of literacy skills of Americans were any different from those of other industrialized countries. Action on the literacy policy front was seen as depending in part on an answer to this question.

It was for this reason that the National Center for Education Statistics of the United States Department of Education, in close co-operation with Statistics Canada and the Government of Canada, initiated the steps and provided the necessary funding to develop the first International Adult Literacy Survey (IALS), launched in 1994. Since the mid-1990s, surveys of adult literacy skills have been undertaken in more than 20 countries. Together these countries account for over 50 percent of the world's entire gross domestic product. As such, the literacy data now available contribute importantly to an understanding of the demand and supply of skills in the global, knowledge-based economy.

This monograph presents 10 international indicators that allow readers to compare the literacy proficiency of Americans with that of other populations. The findings confirm that low literacy is an important issue in all regions and countries surveyed. But there are both countries that do better and countries that do worse than the United States. Understanding why these differences have occurred, and particularly, what policies may have contributed to success and failure, is an important consideration.

Drawing on the results of the International Adult Literacy Survey, on the findings of previous research, and on the collective experience of Member countries of the Organisation for Economic Co-operation and Development (OECD), this monograph concludes with a proposal for 10 targets and tools for improving literacy. While not all will carry equal weight in national and state strategies, each will have to be considered as part of a comprehensive and encompassing plan of action for building a truly literate America.

Ronald S. Pugsley

Director

Division of Adult Education and Literacy

Office of Vocational and Adult Education

Executive Summary

The International Adult Literacy Survey was a 22-country initiative conducted between 1994 and 1998. In every country nationally representative samples of adults aged 16-65 were interviewed and tested at home, using the same literacy test. The main purpose of the survey was to find out how well adults use information to function in society. Another aim was to investigate the factors that influence literacy proficiency and to compare these between countries.

This monograph presents 10 international indicators that allow readers to compare the literacy proficiency of Americans with that of other populations. The results presented in the text refer to the prose literacy scale. Similar results for the document and quantitative scales are provided in Annex A. Where applicable, the data tables in Annex A also include the standard errors of the estimates. These errors are taken into account when overall country comparisons are made.

The findings confirm that low literacy is an important issue in all regions and countries surveyed. On the whole, the findings show that American adults are at an average level of prose literacy performance, behind the Nordic countries and the Netherlands but at a par with adults in Australia, Canada and Germany. But on every indicator there are both countries that do better and countries that do worse than the United States.

The average performance results for the United States and neighboring Canada mask the fact that in both countries there is a high degree of variation in the distribution of prose literacy skills, with large numbers of people at both the lowest and the highest levels of literacy. Americans and Canadians at the top 25th percentile of the population distribution have a high average level of literacy compared with adults in all other nations surveyed, including Italy, Germany, Switzerland and the United Kingdom. But inequality in the range of literacy scores in North America is also among the highest of the countries studied. This inequality in the distribution of literacy ability poses a large challenge to policy makers.

The challenge issued to policy makers is to ensure that all citizens have access to literacy- and learning-rich environments in their homes, their communities and at work. This implies a commitment to literacy and learning in every aspect of daily life— 'life-wide' as well as 'life-long'. Accordingly, 'life-long learning' is proposed as offering an overall framework for the design and implementation of policies for improving literacy in America. Within this framework, 10 specific policy targets and instruments are identified:

- Promoting cultures of life-long and life-wide learning
- Promoting early childhood education and care programs
- Promoting measures to improve the quality of education
- Promoting steps to reduce inequality in the outcomes of schooling
- Promoting access to adult education for all citizens
- Promoting workplace literacy programs
- Promoting literacy-rich environments at work
- Promoting literacy-rich environments at home
- Promoting literacy-rich environments in the community
- Promoting access to information and communication technologies

There are domains of public policy other than those related to education and work that are literacy sensitive. Sometimes indirectly rather than by design, policy can influence literacy acquisition, maintenance and use. Literacy is, for example, a factor in crime prevention and the administration of justice. There also is evidence showing that literacy has health policy implications. Literacy is an element in the framing of policies related to youth and seniors. Language,

culture or citizenship policies also have literacy dimensions, as do social welfare policies, rural development policies, and policies related to various disadvantaged groups.

Policy for improving literacy outcomes in America therefore requires a multiple approach, one that ensures that literacy issues are an integral concern in the framing of other public policies.

Introduction

Overview

The International Adult Literacy Survey was the first comparative assessment of adult literacy skills ever undertaken internationally. Over 75,000 adults from 22 countries were interviewed and tested in their homes in 15 languages between 1994 and 1998. The purpose of the study was to improve understanding of the nature and magnitude of the literacy issues faced by nations and to investigate the factors that influence the development of adult literacy skills in various settings—at home, at work and across countries.

In 1994, nine countries—Canada (English and French-speaking populations), France,[1] Germany, Ireland, the Netherlands, Poland, Sweden, Switzerland (German and French-speaking regions) and the United States—fielded the world's first large-scale, comparative assessment of adult literacy. Data for seven of these countries were published in December 1995. Five additional countries or territories—Australia, the Flemish community in Belgium, Great Britain, New Zealand and Northern Ireland—administered the IALS instruments in 1996 and published results in November 1997. Finally, nine other countries or regions—Chile, the Czech Republic, Denmark, Finland, Hungary, Italy, Norway, Portugal, Slovenia and the Italian-speaking region of Switzerland—participated in a new wave of collection in 1998. Results for these latter countries became first available in June 2000; findings for most of them are included in this monograph.

Definition of Literacy

In IALS proficiency levels along a continuum denote how well adults use information to function in society. Thus, literacy is defined as *the ability to understand and employ printed information in daily activities, at home, at work and in the community—to achieve one's goals, and to develop one's knowledge and potential.* In denoting a broad set of information-processing competencies, this conceptual approach points to the multiplicity of skills that constitute literacy in advanced industrialized countries.

The conceptual framework and the definitions of the literacy domains used for the assessment built on the seminal work of Irwin Kirsch and Peter Mosenthal (see Annex C). In particular, the IALS assessment was based on the theoretical and methodological insights offered by four large-scale North-American surveys: The Functional Reading Study conducted in the U.S. by the Educational Testing Service (ETS) in the early 1970s; the Young Adult Literacy Survey fielded in the U.S. by ETS in 1985; the Survey of Literacy Skills Used in Daily Activities undertaken by Statistics Canada in 1989; and the National Adult Literacy Survey conducted in the United States by ETS between 1989 and 1992.[2]

Literacy is measured operationally in terms of three domains, each encompassing a common set of skills relevant for diverse tasks:

- *Prose literacy* – the knowledge and skills needed to understand and use information from texts including editorials, news stories, poems and fiction.
- *Document literacy* – the knowledge and skills required to locate and use information contained in various formats, including job applications, payroll forms, transportation schedules, maps, tables and charts.
- *Quantitative literacy* – the knowledge and skills required to apply arithmetic operations, either alone or sequentially, to numbers embedded in printed materials, such as balancing an account, figuring out a tip, completing an order form or determining the amount of interest on a loan from an advertisement.

The IALS employed a sophisticated methodology developed and applied by the Educational Testing Service to measure literacy proficiency for each domain on a scale ranging from 0 to 500 points. Literacy ability in each domain is expressed by a score, defined as the point at which a person has an 80 percent chance of successful performance from among the set of tasks of varying difficulty included in the assessment.[3] Five levels of literacy correspond to measured ranges of scores achieved. *Level* 1 indicates persons with very poor skills, where the individual may, for example, be unable to determine the correct amount of medicine to give a child from information printed on the package. *Level* 2 respondents can deal only with material that is simple, clearly laid out, and in which the tasks involved are not too complex. It denotes a weak level of skill, but more hidden than Level 1. It identifies people who can read, but test poorly. They may have developed coping skills to manage everyday literacy demands, but their low level of proficiency makes it difficult for them to face novel demands, such as learning new job skills. Performance at *Levels* 3, 4 and 5 requires the ability to integrate several sources of information and solve more complex problems.

Study Design

The data presented in this report were collected by the countries participating in successive cycles of data collection between 1994 and 1998, using nationally representative samples of the adult population aged 16-65. The fact that some countries collected data a few years earlier or later than others is thought not to affect the international comparability of the survey data because the literacy profiles of nations are quite stable and are normally expected to change only slowly with the passing of time.[4]

The survey was conducted in people's homes by experienced interviewers. The design used for IALS combined educational assessment techniques with methods of household survey research. Multiple quality control measures were implemented throughout the course of the study in order to ensure that high-quality data would be obtained. Annex B describes the measures taken to improve data quality and comparability and addresses specific issues concerning validity, reliability and comparability.

In brief, respondents were first asked a series of questions to obtain background and demographic information. Once this background questionnaire was completed, the interviewer presented a booklet containing six simple tasks. If a respondent failed to complete at least two of these correctly, the interview was adjourned. Respondents who completed two or more tasks correctly were then given a much larger variety of tasks, printed in a separate booklet. The assessment was not timed, and respondents were urged to try each exercise. Respondents were thus given maximum opportunity to demonstrate their skills.

Survey and Research Team

IALS was a large-scale co-operative effort by governments, national statistical agencies, research institutions and the Organisation for Economic Co-operation and Development (OECD). Overall responsibility for the study was shared between Mr. T. Scott Murray and Ms. Nancy Darcovich of Statistics Canada and Mr. Albert Tuijnman, formerly of the OECD. The development and implementation of the survey were co-ordinated by Statistics Canada and the Educational Testing Service (ETS) of Princeton, New Jersey. Mr. Irwin Kirsch and Mr. Kentaro Yamamoto were ETS Project co-Directors. Ms. Marilyn Binkley of the National Center for Education Statistics (NCES) was the National Study Director for the U.S. component of the study. Mr. Stan Jones, consultant to Statistics Canada, acted as International Project Advisor.

Data collection constituted the largest cost to the countries that participated in the IALS program of work. Most paid the full cost of data collection[5] and adhered to the international data collection guidelines specified by Statistics Canada and ETS. The costs of the international co-ordination, data analysis and reporting for the first survey cycle were covered principally by the Canadian Government and NCES. In further cycles the participating countries were required to

assist in offsetting some of the international overhead costs. Limited funding was also obtained from the European Union and the OECD. NCES and the Division of Adult Education and Literacy, Office of Vocational and Adult Education of the U.S. Department of Education funded the national study in the United States.

Organization of this Monograph

This monograph presents summary findings for 21 of the 22 nations that took part in the assessment. The results presented in the next chapter were computed at ETS and Statistics Canada by analysts using sophisticated but recognized procedures for scaling and the calculation of plausible values, population mean scores and standard errors. The results presented are consistent with those published previously in the IALS final report.[6]

Chapter 1 presents ten benchmarks for assessing adult literacy in America against the backdrop of results achieved by other nations, the majority of them economically advanced Member countries of the OECD. Chapter 2 proposes ten targets and tools that might be employed to improve literacy in America. Successful policies will require a broad and encompassing approach, targeting different audiences and addressing a range of policy domains related to life-long learning. Chapter 3, finally, presents some overall conclusions for policy.

1 France withdrew its data in November 1995, after the comparative results had become available, citing concerns about comparability. The French results are therefore not included in this monograph. A new data collection was undertaken in France in 1998 as part of a European Union financed research study that applied the same methods and the same test instruments as were used in the original IALS. The results of this study are reported in Carey (2000), see Annex C.

2 See Kirsch, I.S., Jungeblut, A., and Mosenthal, P.B. (1998), "The measurement of adult literacy", pp. 105-134 in Murray, T.S., Kirsch, I.S., and Jenkins, L.B. (Eds.), *Adult literacy in OECD countries: Technical report on the first international adult literacy survey*, United States Department of Education, National Center for Education Statistics, Washington, DC.

3 The RP-80 criterion is explained in Yamamoto, K. (1998), "Scaling and scale linking", pp. 161-178, in Murray, T.S., Kirsch, I.S., and Jenkins, L.B. (Eds.), op. cit.

4 The possibility that a nation succeeds in significantly altering its literacy profiles within the course of 4-5 years cannot be ruled out. Major educational reforms, for example, can influence the literacy profiles of specific sub-populations.

5 Chile and Poland received limited financial support from UNESCO and Slovenia did the same from the World Bank.

6 OECD and Statistics Canada (2000), *Literacy in the Information Age: Final Report of the International Adult Literacy Survey*, Paris and Ottawa.

CHAPTER 1

Ten Benchmarks for Assessing Literacy in America

This chapter presents ten international indicators of literacy proficiency that allow comparisons to be made between populations and across nations. The first four are used to examine the condition of literacy among youth and young adults aged 16-19 and 20-25.[7] They allow readers to judge the overall level of literacy ability of the young population, to examine the literacy ability of recent high school dropouts and to contrast this with the level attained by graduates from colleges and universities. The fourth indicator describes the degree of relative inequality in literacy scores among young persons.

The four indicators presenting the results for the young populations are replicated for the adult population aged 25-65. This allows the reader not only to examine the levels of literacy achieved by adults in different nations, but also to draw comparisons of relative literacy performance among young and older adults.[8] The final two indicators are used to study the literacy profiles of two specific populations of special interest to policy makers: adults aged 45-65 and the foreign-born population using a language other than English.

As mentioned in the Introduction, the IALS employed three scales for measuring and reporting literacy scores. Because of space limitations the data values and graphics presented in this chapter are all based on the prose literacy scale.[9] Country results may differ from scale to scale. For this reason the data values for all 10 indicators and all three scales are reported in Annex A, *National Scores and Standard Errors*. Readers will be alerted in the text below when results for the United States differ dramatically across the three scales.

Readers are advised that, where possible, standard errors of the estimates are provided in the data tables in Annex A. These errors should be taken into account when comparing national scores.[10] To facilitate this, the countries in the graphs presented in this chapter are grouped into three categories:

(A) Nations with average scores significantly higher than the United States;
(B) Nations with average scores not significantly different from the United States;
(C) Nations with average scores significantly lower than the United States.

Literacy Proficiency of Youth

Figure 1 presents country mean scores on the prose literacy scale for the youth population aged 16-25. The international average for the 21 countries is 277 points on a scale with a range from 0-500 points. It can readily be seen from the chart that the country average masks quite considerable variation between countries. Youth in Finland and Sweden score on average at 300 points or above, whereas youth in Chile and Poland score on average close to 250 points or below. The mean score for the U.S. youth population is 278 points, a difference from the overall country average that is not statistically significant. Canadian youth perform relatively better, with a mean score of 287 points, but the difference is within the standard error. In terms of their literacy ability, and taking measurement error into account, the U.S. youth population performs the same as youth in the United Kingdom, Italy, New Zealand, Ireland, the Czech Republic,

Switzerland, Germany, Canada and Belgium (Flanders). The literacy scores of American youth are consistent across the three scales.

Literacy Proficiency of High School Dropouts

High school completion has become a minimum education standard for young people in the United States today. National Education Goal 2 states that by the year 2000, the high school graduation rate will increase to at least 90 percent. By 1997, 17 out of 51 states had already achieved a 90 percent high school completion rate. The opposite of high school completion is high school dropout, which happens when young people in grades 9 through 12 leave school without completing a recognized secondary program. A multitude of evidence from various sources indicates not only that this population faces severe handicaps in entering stable employment and making ends meet economically but also that their labor market prospects have worsened over the last decade.

Figure 2 presents the prose mean scores of the population aged 20-25 who left secondary school without a recognized program in the 19 countries for which comparable data are available. It can readily be seen that the mean score of U.S. high school dropouts is among the lowest of the countries investigated. Only Slovenian and Chilean youth score significantly lower. High school dropouts in Canada and the United States have the same level of prose literacy but U.S. youth perform slightly better on the document scale. In about half the countries high school dropouts score significantly better than their counterparts in Canada and the U.S.

Literacy Proficiency of College Students

Increasingly, in the economically advanced countries, the desired threshold level for good jobs is not high school completion but some college or university education. Net rates of entry into higher education already exceed 50 per cent of a cohort of high school leavers in one-third of OECD countries, and rates continue to increase across the board. In the United States also, the percentage of high school graduates who immediately enroll in 2-year or 4-year colleges and universities has increased steadily over the past decade. Between 1992 and 1996, 39 states (out of 51) significantly increased their rates of transition to higher education. In states such as New York, Massachusetts and North Dakota more than 70 per cent of high school graduates continue on to some form of post-secondary education.[11]

Figure 3 presents evidence on the literacy proficiency of the young population aged 20-25 with some experience of college or university. The graph shows the prose mean scores of populations across countries. Some countries with highly selective education systems will have a low rate of transition to higher education combined with a very high literacy profile among college students. Other countries will seek to combine high rates of transition with high levels of literacy. The data suggest that university students in Norway and Sweden—two countries with high rates of transition to tertiary education—outperform students in the other countries. College students in the United States perform a little higher than average in prose literacy, although the difference is not significant. Their level is the same as that of students in the majority of the countries studied, including the United Kingdom, Ireland, Canada, Australia, New Zealand and the Netherlands.

Inequality in Literacy Proficiency Among Youth

Figure 4 presents information about the degree of inequality in the distribution of prose literacy scores among the young population aged 16-25 in 21 countries. The estimates are obtained by comparing the prose literacy mean score of the best performing 10 percent of this population with the mean score of the worst performing 10 percent.[12]

Values on the index of prose literacy inequality range from a low of 1.3 for Denmark, Finland and Norway to 1.7 for New Zealand, Poland, Portugal and the United Kingdom. With an

index value of 1.6, inequality in the distribution of literacy scores among the young population in the United States is slightly lower and similar to that among youth in Chile, Italy, Slovenia and Canada. The distribution of literacy scores among U.S. youth is consistent across the three scales. This is not the case for Poland and the United Kingdom, for example, where the range of inequality is even larger for the document and quantitative scales than for prose. In the majority of the countries literacy inequality is lower than inequality in Canada and the U.S. Inequality is lowest in the four Nordic countries. Separate data analyses have shown not only that young people in Denmark, Finland, Norway and Sweden have high levels of literacy on average but also that little of the observed variation in skills is attributable to differing levels of parental education.[13]

Literacy Proficiency of the Adult Population

Figure 5 presents evidence on the prose literacy performance of the entire adult population aged 26-65. Scores on the prose scale with a range from 0-500 points range from 209 points in Portugal to 298 points in Sweden. This indicates that there is a large spread in scores between the comparison countries. The mean score for the U.S. adult population is significantly above average, at 277 points. This puts the American population at the same level of literacy proficiency as the populations of Australia, Denmark, Germany, New Zealand, Canada and the Netherlands. Americans significantly outperform the adult populations of a range of countries: Portugal, Chile, Slovenia, Poland, Italy, Hungary, Switzerland, Ireland, the United Kingdom, the Czech Republic and Belgium (Flanders). Given the large linguistic and cultural heterogeneity of the American population relative to that of many comparison countries, this could be considered a good result. The U.S. literacy scores are somewhat lower on the document scale. In only three countries are the test scores significantly higher than in Canada and the United States: Finland, Norway and Sweden.

Literacy Proficiency of Adults at Top 25th Percentile

Policy makers are interested not only in the mean level of literacy proficiency but also in the way the literacy scores are distributed among the population. In some countries, Denmark for example, this distribution is tight, indicating small differences between those performing at the top and those at the bottom. Other countries will have a large spread in scores. Figure 6 presents prose literacy scores at the 75th percentile. The evidence shows that Americans (323 points) and Canadians (322 points) score second to Swedes (332 points) but similarly or higher than all other comparison countries. Thus North America has a high level of literacy ability at the top end of the population distribution. Relative to population size the 'pool of talent' at the top end of the literacy distribution is larger in North America compared with Europe.

Literacy Proficiency of Adults at Bottom 25th Percentile

Figure 7 presents evidence on the level of literacy at the bottom 25th percentile of the population distribution. The prose literacy score of Americans and Canadians at the 25th percentile is average and similar to the scores of adults in Australia, Canada and the Czech Republic. Scores of adults at the bottom quarter are significantly higher than Canada and the U.S. in the Nordic countries, the Netherlands and New Zealand. In contrast, the bottom quarter of Americans and Canadians outperform adults in countries such as Ireland, Italy, Switzerland and the United Kingdom.

Inequality in Literacy Proficiency Among Adults

Indicator 8 presents summary information about the extent of inequality in the distribution of prose literacy scores. The index values are very high for Portugal, Poland, Slovenia and Italy, suggesting a very large degree of literacy inequality in these countries. This result is due to the low average performance of a large group of adults at the bottom of the distribution. Canada and

the United States have the same inequality index. A value of 1.9 indicates considerable inequality in the distribution of adult literacy in North America. In contrast, Australia, New Zealand and most of the Western European countries have a more equal distribution. Variations in average and range point to important characteristics of a country's skill profile. Issues of equity arise where there are large differences between the people with the lowest and the highest literacy skills, as is the case in both Canada and the United States.

Poor Literacy Proficiency Among Adults Aged 45-65

Figure 9 shows the proportion of adults aged 45-65 in each country who score at different levels of literacy. People at Level 1 have only rudimentary prose literacy skills, making it difficult for them to cope with the rising demands for literacy skills at work and in everyday life. On the whole, 20 percent of Americans aged 45-65 and 27 percent of Canadians score at this most basic level, compared with 12 percent of Swedes (the highest performing country) and as many as 69 percent of Chileans (the poorest performing country among those tested to date). With 20 percent of older adults at Level 1 on the prose scale, the United States is in a quite similar position as the Czech Republic, Finland, Germany and New Zealand. The Canadian figure (27 percent) is close to the average over all the countries (28 percent). The situation is worse in a range of countries. In Chile, Italy, Poland, Portugal and Slovenia more than half of all adults between 45 and 65 years have very poor literacy skills, making it all but impossible for them to participate fully in the knowledge-based economy or the information society. Table 9 in Annex A presents complete estimates of the proportions of the population at Levels 2, 3 and 4/5 on the prose, document and quantitative scales.

Poor Literacy Proficiency Among Second-language Foreign-born Population

The final indicator in this monograph shows the percentage of native-born and second-language foreign-born population aged 16-65 scoring at Level 1 on the prose literacy scale. The second-language foreign-born population refers to persons with immigrant background who used to speak a language other than the main national one(s). Thus, an English-speaking American living in Canada would be excluded but a Spanish-speaking Mexican immigrant into the United States would be included. In all countries but Italy and Portugal there are large differences in performance between the native-born and the foreign-born populations.[14] The common tendency is for the foreign-born population to have much larger proportions at the lowest levels of literacy. This is the case in both Canada and the United States. Among the native-born population, 14 percent of Americans and 13 percent of Canadians perform at Level 1 on the prose scale. These proportions are 64 and 51 percent, respectively, for the second-language foreign-born population. Thus more than half of the immigrant population that arrived in the United States primarily speaking a language other than English or, in the case of Canada English or French, has very poor literacy skills in the languages tested. In European countries too there are large differences between the two population groups, for example in Germany and Switzerland.[15]

Summary: A Comparative Assessment

On the whole, the findings show that American adults are at an average level of prose literacy performance, behind the Nordic countries and the Netherlands but at a par with adults in Australia, Canada and Germany. American and Canadian adults significantly outperform adults in Ireland, Switzerland and the United Kingdom. There is a large gap between the literacy performance of American adults and poorer performing populations in the emerging economies of Chile, the Czech Republic, Hungary, Poland, Portugal and Slovenia.

But the averages for the United States and neighboring Canada mask the fact that in both countries there is a high degree of variation in the distribution of prose literacy skills, with large numbers of people at both the lowest and the highest levels of literacy. Americans and Canadians at the top 25th percentile of the population distribution have a high average level of literacy compared with adults in all other nations. Thus the literacy ability of the top-performing segment of the North American workforce is superior to that of the high-achieving segment of workers in many European countries, including Italy, Germany, Switzerland and the United Kingdom.

But inequality in the range of literacy scores in North America is also among the highest of the nations surveyed. Especially in the United States, inequality in the distribution of literacy scores on the English test used for the survey is strongly related to economic inequality measured by income differentials between households. The high degree of inequality in the distribution of literacy proficiency in Canada and the United States poses a large challenge to policy makers, because all citizens require high levels of literacy to be able to participate fully in the information-dependent society and derive benefits from the strong North American economy. This is important because, in both countries, literacy proficiency and educational attainment have been shown to exert powerful effects on the labor market outcomes of individuals, including their wages.

The results indicate that a good part of the observed differences in skill can be attributed to differences in the quantity of education people in various nations have received. It is also clear that some of the observed differences are related to between-country variation in the quality of education. For example, young Americans aged 20-25 with a completed college or university education demonstrate an average level of literacy ability, a level comparable to that of college-educated young adults in Australia, Canada, Ireland, New Zealand and Portugal. In contrast, young Americans and Canadians who have not completed high school score quite poorly compared with adults with a similar education level in the other countries.

With 1 in every 5 adults aged 45-65 at Level 1, there can be no denying that the United States has a literacy issue to deal with. Even if it is true that the magnitude of the problem is worse in the majority of the countries surveyed, the issue nevertheless carries such importance that it must be addressed. That a disproportionate number of those with the lowest skills are second-language foreign-born does not make the challenge any easier. The next chapter considers some of the options for policy.

CHAPTER 2

Ten Targets and Tools for Improving Literacy in America

This chapter proposes 10 targets and tools for improving literacy outcomes in America. Considered in isolation, these policy instruments are neither novel nor surprising. What is new, however, is the idea to employ them deliberately and collectively as elements of a comprehensive strategy for improving literacy outcomes. The proposed instruments are derived from an analysis of major international policy documents, previous research studies, the empirical analyses of the determinants of literacy proficiency using the IALS survey data,[16] and experiences of education and literacy policy in OECD countries.

Promoting cultures of life-long and life-wide learning

Learning is the self-evident key to improving literacy outcomes. But learning occurs not only in schools; it is a fundamental and defining feature of human life itself. This principle is underscored in several recent policy statements about the necessity of promoting life-long learning for all citizens. Agencies such as the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Development Programme (UNDP), OECD and the European Union have all contributed to the building of an international consensus concerning the goals, means and ends of life-long learning. The National Education Goals Panel in the United States has monitored progress in adult literacy and life-long learning since 1994.

Life-long learning policies are grounded in the realization that firms, communities and whole countries are faced with a stupendous challenge of adjustment brought about by a fundamental change in the forces and factors of production in emerging knowledge and information based economies. But life-long learning policies are also promoted for non-economic reasons, on the grounds that education and skills are at the heart of any rational, enlightened and democratic society. Life-long learning, as currently understood, is a normative concept that is assigned meaning in a situation of uncertainty, change and structural adjustment.

Thus ideas about life-long learning are not static but evolving; they vary according to context and various political, economic, social and cultural factors. Current statements on life-long learning are similar in that they go far beyond providing a second or third chance for at-risk adults. They generally define a broad set of beliefs, aims and strategies around the central tenet that learning opportunities available over the whole life span and accessible on a widespread basis should be key attributes of modern societies. They are based on the belief that everyone is able to learn, all must become motivated to learn, and should be actively encouraged to do so throughout the life span, whether this occurs in formal institutions of education and training or informally—at home, at work or in the wider community. This understanding of life-long learning is pervasive because it is not restricted to learning that is somehow intentional and structured, or that takes place in formal, institutional settings.

In some quarters there still lingers the idea that life-long learning only concerns adult education, defined as organized educational processes whereby persons regarded as adults by the society to which they belong engage in systematic and sustained educational activities. Others consider not only organized educational activities but also non-formal, self-directed and experiential forms of adult learning as expressions of life-long learning. For again another group, life-long learning is not confined to adults, but includes the full range of learning extending over

the entire life course. This monograph endorses the latter view. It supports the notion that the settings for learning are both 'life-long' (referring to a process of individual learning and development across the entire life span, from cradle to grave) and 'life-wide' (referring inclusively to formal education in institutions but also to non-formal and informal learning at home, at work and in the wider community) and embrace social and individual development of all kinds.

Life-long learning presents an appropriate, inclusive framework for the building of a comprehensive policy strategy for improving literacy outcomes in America. The emphasis on 'learning' rather than 'education' is highly significant because it reduces the traditional preoccupation with structures and institutions and instead focuses on the individual. In any sound strategy aimed at the building of a learning society for improving literacy outcomes, the first and foremost concern is with the young child.

Promoting early childhood education and care programs

In the perspective of life-long learning, the foundations assume new importance and meaning, as they are the basis for developing the ability and motivation to learn throughout adult life. Literacy builds early in life as children learn to communicate in a variety of contexts. These early years of language acquisition provide a critical foundation that affects children's school experience—and eventually, in the long run, their occupational careers and well-being. Not all children, however, develop at the same rate. By the time they reach compulsory school age there are significant differences in their verbal skills, including literacy proficiency. These differences are largely attributable to the effects of socialization, particularly within the family. Societies that are rich in human capital, as gauged by the literacy levels of their youth, achieve this wealth by enabling children from less advantaged backgrounds to be school ready and to achieve relatively high levels of literacy early on. Early childhood education and care programs are an important means to this end. Early childhood policies should therefore be considered not only as an element of life-long learning but also as a strategic concern for federal and state governments aiming to improve literacy outcomes in the long term.

Promoting measures to improve the quality of education

Besides the effects of early socialization, particularly the "long arm of the family", education also plays a critical role in influencing literacy proficiency. In all countries surveyed, the IALS data reveal a very strong association between literacy proficiency and the received amount and quality of initial, formal education. Young adults who have completed high school score higher, on average, than those who have not and, in turn, in many countries those who have received some college or university education score still higher. Yet the data also reveal that there are differences between countries in the strength of the association between education and the literacy outcomes of youth. These differences are in part attributable to variation in the level of education of parents but also depend on the quality of education that children receive. Life-long learning is unattainable without high-quality foundation learning to ensure that all children of all walks of life become literate, numerate and confident individual learners.

Promoting measures to reduce inequality in the outcomes of schooling

In order to improve literacy outcomes across the board, it is important that a concerted effort be made to reduce inequalities in the outcomes of schooling between children from different social groups. Many IALS respondents whose scores were at the lowest literacy level were receiving some form of social assistance. A primary link between literacy and socio-economic status is the effect of segregating low-status groups from mainstream society. Ethnic minorities, people with low incomes and the unemployed are segregated by their place of residence in most of the

world's cities. This segregation limits access to certain labor markets and to the best schools for all children. The effects of residential segregation can be either reduced or exacerbated by government policy and workplace practices that determine where educational and training programs are located, and who has access to them. Employers, policy-makers, educators, and other community leaders need to become aware of those structural features of the education system and labor market that lead to steep skill differences between social groups, and take steps to ensure that children and workers from differing backgrounds have equal opportunities for high-quality schooling and training. They also need to ensure that there are a number of different avenues for avenues for youth and adults to recover from inadequate educational experiences.

Promoting access to adult education for all citizens

In economically advanced countries participation in adult education and training has become a common activity. Yet the IALS data show that in each country surveyed there are large groups outside the learning society. Judged by their literacy scores, those outside are often those most in need of skill enhancement. Yet rates of participation in adult education increase consistently by increasing levels of literacy: those with low skills receive the least adult education. The fact that adult education has become strongly tied to the world of work poses the risk that certain social groups are systematically excluded. Not everybody is in the labour force. Moreover, because job status is linked with educational attainment and opportunities to learn, workers in blue-collar occupations receive far less training compared with workers in white-collar occupations. The likelihood of receiving employer support for training is also directly related to both the level of education and occupational category. In short, those who already have a good initial education and adequate literacy skills are those who benefit most from available learning opportunities. A sound strategy for improving literacy outcomes in America would seek to employ means to ensure that those with poor skills receive a larger share of the available adult education resources than they do at present.

Promoting literacy-rich environments at work

Literacy skill profiles and indicators of the world of work are related in complex ways. Because literacy is required by many jobs, high literacy skills are likely to lead to better employment prospects. At the same time, the workplace is a factor in literacy acquisition and maintenance, a place where a considerable amount of reading, writing and arithmetic takes place. Often these two aspects of workplace literacy reinforce each other: Skills learned in schools facilitate engaging more frequently in more complex activities at the workplace that in turn build skills. The IALS survey results confirm this dual role of workplace literacy. Individuals who engage regularly in informal learning at work through activities such as reading, writing and calculation have more and better opportunities to maintain and enhance their foundation skills than people who do not use these skills regularly. Not surprisingly, the evidence from IALS indicates that people with high levels of literacy skills have more opportunities to use them in the workplace than people with low levels of skills. The inevitable conclusion is that the workplace has an essential role to play in nurturing literacy. In seeking ways to improve literacy in America, federal and state governments should work in a productive partnership to ensure that private and public sector employers explicitly demand literacy skills, that they put to use the skills their employees already possess, and that they reward literacy skills as an incentive for workers to maintain and develop them.

Promoting workplace literacy programs

In most countries, individuals with poor literacy skills engage in writing at work less than once a week. Given that persons with poor skills have little exposure to literacy tasks at work, it would seem unlikely that they can develop their skills without some form of formal instruction or training. However, the IALS evidence on employer-support for training suggests that people with

low literacy skills are not afforded this opportunity. The likelihood that workers receive training support from employers is closely connected with these workers' use of literacy skills at work. Workers who use workplace literacy skills the least are less likely to participate in employer-supported training than workers who use workplace literacy skills the most. Employers' efforts to enhance productivity might be channeled into two directions: improving the literacy abilities of less-literate workers, and enabling workers to make the best use of the skills they do have. Many employers might be willing to invest in workplace literacy programs but they are unclear about what kind of instruction to invest in and unsure about the ways in which it will be cost-effective. Governments could help by disseminating information about best practices in workplace literacy programs and supporting the infrastructure necessary to deliver high-quality instruction.

Promoting literacy-rich environments at home

Even if America succeeds, as part of its strategy to promote life-long learning for all, in building high-quality foundation learning for all and supporting a widely accessible infrastructure for adult education and workplace literacy, it still has to factor in the fact that literacy, in the beginning and the end, is a matter of individual life style and an expression of the culture of the home. IALS respondents were asked several questions about the literacy-related activities they engaged in at home, including reading a newspaper or magazine, reading a book, writing letters, and watching television. In each country the findings showed the same pattern: those with higher levels of education and higher levels of literacy are on average more often engaged in reading and writing, whereas the inverse was true for hours of watching television. Analysis of the IALS data showed that literacy scores are positively related to peoples' daily reading practices, suggesting that if literacy skills are not used they will deteriorate. These findings imply that low levels of literacy are not solely the result of inadequate support from families, low-quality schooling, a lack of workplace literacy programs, or any other single factor. They stress the need for a comprehensive strategy for developing family literacy programs that requires support from governments, employers and social partners, and local communities. Family literacy programs can fruitfully be linked with early childhood education and care programs in educationally disadvantaged areas. This is particularly important because the parents' role in skills acquisition is critical especially in the first years and during the pre-school period.

Promoting literacy-rich environments in the community

Social capital theorists argue that participation in non-work contexts is an important determining factor of the quality of democratic life and civic society. Social capital is reflected in participation in voluntary associations, norms of reciprocity and trust, and networks of civic engagement. Just as literacy skills are a prerequisite to learn efficiently on the job, participation in civic society is necessary for developing civic skills. Voluntary associations and community activities are therefore important arenas for informal learning that can stimulate the development of new skills as well as preventing others from being lost due to lack of use. Strengthening community-based education and literacy programs should therefore be a prominent element of a strategy for life-long learning. There are community initiatives that could possibly bring a 'three-to-one' or 'two-to-one' return compared with other kinds of interventions. For example, a literacy program that emphasized parent training could potentially have three benefits: better care and literacy development for the participants' children; improved literacy for the participants, possibly leading to greater self-sufficiency; and, in the longer term, reduced health care and other social costs for both the participants and their children. Similarly, a literacy program for seniors that emphasized health and fitness could have a two-fold return. In order to assist those with low literacy skills, a strategy will have to be devised that reaches out and capitalizes on the strengths of communities and the voluntary sector.

Promoting access to information and communication technologies

The final element to be considered in a forward-looking literacy strategy concerns access to and use of information and communication technologies. Today that access and use are sharply delimited along lines marked by differences in education and occupation. But literacy ability is a factor behind both educational and occupational attainment. Building an inclusive information society therefore presupposes the building of a learning society that enables all citizens to acquire, maintain and develop their literacy skills. Thus literacy is the common element that links the information society, the knowledge economy and cultures of life-long learning.

Summary: The Ways Ahead

Success in realising life-long learning – from early childhood education to active learning in senior years – will be an important factor in promoting literacy, employment, economic development, democracy and social cohesion in societies in which globalisation and the wide diffusion of information and communication technologies are still gathering momentum. This chapter has considered 10 tools and targets for a comprehensive strategy that seeks to improve literacy by encouraging all forms of learning, whether this occurs in schools, workplaces, communities or in daily life at home. It follows that an encompassing and system-wide approach will have to be built on the efforts of many actors: learners of all ages, parents, employers and social partners, voluntary and community organisations, educational institutions, and educational departments at various levels. But the wide range of literacy-related behaviors and education and learning activities that lie beyond the responsibilities of any single department, whether federal or state, make forging the required partnerships difficult. Many of the tools and targets described in this chapter fall, in one way or another, primarily within the province of the education authorities. The next chapter makes the case, briefly, that the literacy challenges require a coherent approach, one that seeks close connections among partners and a convergence among different departmental portfolios, including employment, immigration, social welfare and health.

CHAPTER 3

Policy Implications

The previous chapter considered the elements of a strategy designed to improve literacy skills in America. The case was made that higher required levels of literacy ability have implications for pre-school children as a formative skill for initial cognitive development. In schools literacy is a foundation skill upon which the acquisition of other knowledge and skills depends. The IALS has demonstrated amply that literacy is an essential work skill and beyond that it is a life skill that enables participation socially, culturally and politically. Finally, literacy is a key skill that enables seniors to live with dignity and confidence while social and economic changes alter familiar landscapes surrounding them.

The challenge issued to policy makers is to ensure that all citizens have access to literacy- and learning-rich environments in their homes, their communities and at work. This implies a commitment to literacy and learning in every aspect of daily life— 'life-wide' as well as 'life-long'. Meeting this challenge requires abandoning the conventional paradigm that equates learning with schooling and replacing it with one that seeks a convergence of schools, homes, workplaces and communities into mutually reinforcing environments that encourage learning in many settings, for all ages, both formally and informally, and throughout life.

Fortunately, many domains of public policy are literacy sensitive. Sometimes indirectly rather than by design, policy can influence literacy acquisition, maintenance and use. Examples are policies that impact on library use, or even tax policies that can promote or inhibit public purchases of reading material. While literacy can be affected, directly or indirectly, by decisions taken on other policy fronts, it also is a factor important to the development of good policy in other domains. For example, literacy has been shown to be an important factor in the economic success of individuals and, in the aggregate, of whole economies. It follows, then, that literacy has implications for human resources, labor market, employment, and education and training policies.

On the social side of the ledger, literacy also has sweeping policy implications. Literacy is, for example, a factor in crime prevention and the administration of justice. There also is evidence showing that literacy has health policy implications. A limited ability to read, for example, will circumscribe access to nutritional and other health-related information.

The crucial point is that literacy affects policy and also is affected by it across a range of domains. In addition to issues concerning justice or health, literacy is an element in the framing of policies related to youth and seniors. Language, culture or citizenship policies also have literacy dimensions, as do social welfare policies, rural development policies, and policies related to various disadvantaged groups. It is, in fact, quite difficult to imagine an area of public policy that lacks a literacy dimension.

For this reason, the development of national, regional or local literacy policy cannot be effective if considered simply as one specific area of concern to be dealt with in a single dimension. The finding that a quarter or more of the populations surveyed as part of the IALS demonstrate poor literacy skills poses a large challenge to governments and entire societies; meeting that challenge requires a strategy that cuts across domains of public policy that have conventionally been considered separately.

The inexorable conclusion is that literacy issues require not only appropriate literacy policies, important though they be. The acquisition, maintenance and enhancement of literacy

skills should feature as an integral concern also in the framing of other public policies. Literacy is one of the fundamental social and economic issues on which policy making must converge. True cultures of life-long learning can only be achieved if literacy awareness permeates the development not only of education policy but also of social, economic, political and cultural policies.

But cultures of life-long learning and literacy cannot be imposed; they must depend and thrive on a great variety of initiatives taken by different actors in many spheres of life and work. In seeking to promote such cultures the government, both federal and state, employers, social partners, the voluntary sector and whole communities should work together and consider literacy issues in multiple dimensions. Neither federal nor state governments can take it upon themselves to invent, manage and pay for flourishing local cultures of literacy and learning; rather their role should be to promote learning in both life-long and life-wide dimensions and to steer developments and allocate resources so that learning opportunities are distributed equitably and efficiently. Since public resources are best directed towards those policy domains where the social return on public investment is the greatest, sound policy would see the targeting of public funds to improving family literacy and foundation learning, including early childhood education and care programs, adult basic education, and workplace literacy programs.

ANNEX A

National Scores and Standard Errors

TABLE 1

Mean prose, document and quantitative scores on a scale with range 0-500 points, population aged 16-25, 1992-1998

	Prose		Document		Quantitative	
Finland	312.8	(2.3)	314.1	(2.5)	297.6	(2.3)
Sweden	312.1	(1.8)	314.4	(2.0)	309.1	(2.1)
Norway	300.4	(2.3)	309.4	(2.5)	299.7	(2.4)
Netherlands	293.5	(2.5)	300.3	(2.7)	294.2	(2.8)
Belgium (Flanders)	292.4	(15.7)	300.1	(11.5)	300.5	(15.0)
Canada	286.9	(4.7)	294.1	(4.7)	284.1	(3.8)
Australia	283.6	(1.5)	284.8	(1.7)	280.2	(1.8)
Germany	283.6	(4.3)	294.0	(3.9)	296.6	(3.9)
Denmark	283.4	(1.5)	305.9	(1.5)	301.5	(1.6)
Switzerland	283.2	(2.2)	293.8	(3.2)	292.4	(2.8)
Czech Republic	280.5	(1.5)	294.7	(2.4)	303.5	(2.5)
United States[1]	277.9	(1.0)	278.6	(1.1)	274.9	(1.1)
Ireland	277.7	(2.9)	271.6	(2.8)	274.0	(2.9)
New Zealand	276.8	(3.2)	275.3	(3.5)	271.1	(3.4)
Average	**276.5**	(1.3)	**278.3**	(1.2)	**275.7**	(1.2)
Italy	275.2	(3.2)	268.0	(2.8)	269.4	(2.8)
United Kingdom	273.5	(3.0)	276.1	(3.4)	265.6	(3.2)
Slovenia	260.7	(3.0)	264.6	(3.0)	271.0	(3.1)
Portugal	259.6	(2.9)	255.4	(3.4)	260.9	(2.9)
Hungary	258.8	(3.3)	266.8	(4.4)	282.4	(4.1)
Poland	251.8	(2.5)	246.2	(2.9)	249.1	(3.3)
Chile	240.1	(3.0)	237.4	(3.0)	229.2	(4.3)

COUNTRIES ARE RANKED BY PROSE SCORES.

1 Values for the United States youth population are derived from the US National Adult Literacy Survey (1992) because a sampling anomaly involving college students limits the comparability of the IALS data for this cohort.

Source: International Adult Literacy Survey, 1994-1998; US National Adult Literacy Survey, 1992.

TABLE 2

Mean prose, document and quantitative scores on a scale with range 0-500 points, for those with less than upper secondary education, population aged 20-25, 1992-1998

	Prose		Document		Quantitative	
Sweden	282.9	(15.2)	292.7	(10.9)	288.8	(11.8)
Finland	280.2	(9.6)	280.0	(9.7)	272.9	(9.3)
Germany	269.5	(7.7)	277.3	(5.2)	282.4	(4.7)
Czech Republic	267.5	(4.3)	275.8	(6.4)	289.2	(6.1)
Netherlands	266.1	(5.3)	273.0	(6.5)	266.9	(5.8)
Norway	265.7	(8.7)	265.8	(12.4)	264.7	(9.0)
Switzerland	263.3 *	(8.0)	265.4 *	(16.1)	274.4 *	(8.7)
Australia	262.3	(3.3)	263.0	(2.9)	259.1	(3.2)
United Kingdom	261.0	(5.5)	261.3	(6.6)	251.4	(6.3)
Belgium (Flanders)	259.9 *	(13.4)	276.2 *	(12.9)	277.1 *	(15.1)
Denmark	257.5	(4.4)	277.4	(5.6)	272.5	(5.5)
Average	244.6	(2.1)	245.4	(1.9)	243.9	(1.9)
New Zealand	242.2	(10.4)	238.3	(12.1)	236.2	(11.4)
Portugal	237.9	(4.6)	237.7	(7.5)	244.2	(6.4)
Ireland	236.1	(6.8)	230.0	(7.3)	233.0	(6.2)
Italy	235.9	(7.6)	235.3	(7.9)	234.2	(7.9)
Canada	231.3	(36.1)	217.8	(37.0)	226.6	(35.7)
United States[1]	227.7	(4.0)	228.0	(4.3)	221.9	(4.1)
Poland	227.1	(4.9)	217.4	(6.7)	224.0	(5.6)
Hungary	216.4	(6.5)	212.0	(8.9)	222.0	(8.6)
Chile	206.4	(5.3)	207.1	(5.5)	189.9	(8.0)
Slovenia	202.9	(7.8)	210.6	(8.9)	217.8	(9.4)

COUNTRIES ARE RANKED BY PROSE SCORES.

* Unreliable estimate.

1. Values for the United States youth population are derived from the US National Adult Literacy Survey (1992) because a sampling anomaly involving college students limits the comparability of the IALS data for this cohort.

Note: Belgium (Flanders) and Switzerland are excluded from Figure 2 because the data are unreliable.

Source: International Adult Literacy Survey, 1994-1998; US National Adult Literacy Survey, 1992.

TABLE 3

Mean prose, document and quantitative scores on a scale with range 0-500 points, for those with some college or university education, population aged 20-25, 1992-1998

	Prose		Document		Quantitative	
Sweden	341.0	(5.7)	339.1	(5.5)	332.6	(6.0)
Finland	336.0 *	(5.1)	341.0 *	(6.6)	323.0 *	(7.6)
Germany	328.9 *	(12.9)	344.6 *	(10.1)	344.3 *	(15.0)
Norway	326.9	(3.5)	341.4	(4.1)	331.3	(5.5)
Czech Republic	325.2	(6.7)	348.0	(8.9)	354.0	(9.3)
Netherlands	321.8	(6.3)	320.9	(5.9)	322.0	(5.6)
Belgium (Flanders)	319.3	(5.0)	323.3	(4.4)	331.5	(5.7)
Portugal	315.0	(6.3)	294.7	(7.0)	305.3	(6.6)
United States[1]	313.4	(2.3)	312.2	(1.9)	310.0	(2.4)
New Zealand	313.1	(5.6)	311.0	(5.3)	302.5	(5.3)
Australia	312.6	(4.9)	312.4	(4.0)	308.5	(4.3)
Average	311.0	(1.3)	311.4	(0.9)	309.2	(1.2)
Canada	309.9	(6.4)	322.6	(9.1)	310.9	(7.8)
Ireland	306.2	(5.6)	300.5	(6.9)	302.8	(6.8)
United Kingdom	304.7	(7.6)	304.4	(6.6)	300.7	(7.0)
Denmark	303.9	(4.3)	327.2	(6.3)	321.4	(6.5)
Slovenia	300.2	(7.4)	310.0	(6.6)	324.0	(8.5)
Switzerland	300.0	(6.1)	316.1	(7.3)	307.5	(6.7)
Italy	293.3	(12.0)	286.2	(12.7)	284.6	(10.2)
Poland	291.5	(5.7)	292.1	(6.3)	289.5	(6.6)
Hungary	287.0	(9.0)	300.7	(9.6)	324.7	(10.9)
Chile	276.8	(4.0)	272.6	(4.0)	275.9	(4.6)

COUNTRIES ARE RANKED BY PROSE SCORES.

* Unreliable estimate

1. Values for the United States youth population are derived from the US National Adult Literacy Survey (1992) because a sampling anomaly involving college students limits the comparability of the IALS data for this cohort.

Note: Finland and Germany are excluded from Figure 3 because the data are unreliable.

Source: International Adult Literacy Survey, 1994-1998; US National Adult Literacy Survey, 1992.

TABLE 4

Inequality in the distribution of literacy (9th decile/1st decile) within countries, prose, document and quantitative scales, population aged 16-25, 1992-1998

	10th percentile	90th percentile	Literacy inequality
A. Prose			
United Kingdom	195.7	338.0	1.7
Portugal	186.7	322.3	1.7
Poland	182.0	312.0	1.7
New Zealand	204.0	338.8	1.7
Chile	182.8	291.1	1.6
Italy	209.4	332.4	1.6
Average	213.0	335.6	1.6
United States[1]	216.2	339.0	1.6
Slovenia	202.2	314.0	1.6
Canada	222.9	342.6	1.5
Ireland	218.6	333.4	1.5
Australia	226.6	339.5	1.5
Hungary	207.2	306.5	1.5
Germany	229.7	335.4	1.5
Belgium (Flanders)	238.8	343.2	1.4
Switzerland	236.6	333.2	1.4
Sweden	258.9	364.5	1.4
Netherlands	238.6	335.9	1.4
Czech Republic	235.0	323.1	1.4
Norway	256.8	344.0	1.3
Finland	267.7	357.6	1.3
Denmark	245.7	318.1	1.3
B. Document			
Poland	161.3	318.3	2.0
United Kingdom	196.3	346.6	1.8
Hungary	199.1	329.8	1.7
New Zealand	205.7	339.4	1.7
Portugal	191.0	310.8	1.6
Average	212.7	341.4	1.6
Slovenia	200.3	320.1	1.6
United States[1]	215.7	341.0	1.6
Chile	182.8	288.5	1.6
Canada	226.7	355.7	1.6
Italy	207.3	322.6	1.6
Ireland	211.2	327.1	1.5
Australia	227.2	337.3	1.5
Switzerland	237.1	351.0	1.5
Czech Republic	238.6	351.4	1.5
Germany	240.5	347.3	1.4
Norway	252.3	360.7	1.4
Sweden	259.6	368.3	1.4
Netherlands	245.2	346.4	1.4
Belgium (Flanders)	248.4	345.1	1.4
Denmark	256.9	354.0	1.4
Finland	263.0	361.9	1.4

TABLE 4 (concluded)

Inequality in the distribution of literacy (9th decile/1st decile) within countries, prose, document and quantitative scales, population aged 16-25, 1992-1998

	10th percentile	90th percentile	Literacy inequality
C. Quantitative			
United Kingdom	178.5	338.4	1.9
Poland	167.5	317.0	1.9
Chile	160.7	291.2	1.8
New Zealand	202.1	331.4	1.6
United States[1]	207.7	339.7	1.6
Average	207.3	338.4	1.6
Ireland	205.9	336.1	1.6
Hungary	214.7	350.5	1.6
Slovenia	203.6	328.7	1.6
Italy	206.7	327.7	1.6
Australia	219.7	335.8	1.5
Portugal	207.5	315.2	1.5
Canada	226.9	340.1	1.5
Sweden	250.3	365.8	1.5
Czech Republic	246.7	354.9	1.4
Belgium (Flanders)	247.4	355.2	1.4
Netherlands	239.7	343.2	1.4
Norway	243.7	348.7	1.4
Germany	243.5	348.1	1.4
Switzerland	241.1	344.0	1.4
Denmark	252.3	348.3	1.4
Finland	250.4	344.3	1.4

COUNTRIES ARE RANKED BY LITERACY INEQUALITY.

1. Values for the United States youth population are derived from the US National Adult Literacy Survey (1992) because a sampling anomaly involving college students limits the comparability of the IALS data for this cohort.

Source: International Adult Literacy Survey, 1994-1998; US National Adult Literacy Survey, 1992.

TABLE 5

Mean scores and scores at the 5th, 25th, 75th and 95th percentiles on a scale with range 0-500 points, prose, document, and quantitative literacy scales, population aged 26-65, 1994-1998

	5th percentile	25th percentile	Mean		75th percentile	95th percentile
A. Prose						
Sweden	212.7	270.1	298.2	(0.9)	332.1	372.0
Norway	208.7	264.2	285.5	(1.4)	313.6	343.8
Finland	197.3	254.8	283.0	(0.8)	317.0	351.2
Netherlands	199.6	253.6	279.8	(0.8)	310.2	342.8
Canada	133.8	245.5	276.9	(2.7)	321.7	363.8
United States	141.6	240.9	276.5	(1.6)	323.2	365.2
New Zealand	168.1	247.0	274.7	(1.5)	311.3	350.1
Germany	198.7	246.6	274.3	(0.7)	305.2	345.9
Denmark	208.8	251.4	273.1	(0.7)	299.5	323.3
Australia	130.6	243.1	271.4	(1.2)	315.4	354.1
Belgium (Flanders)	152.4	235.0	266.6	(1.5)	306.1	345.4
Czech Republic	197.1	241.9	266.1	(0.9)	294.6	328.7
Average	**142.2**	**229.3**	**265.1**	**(0.8)**	**309.3**	**354.4**
United Kingdom	153.6	231.4	265.0	(2.0)	309.5	347.4
Ireland	153.7	227.0	260.9	(4.1)	301.5	344.7
Switzerland	144.6	235.5	259.6	(1.1)	298.1	331.4
Hungary	160.8	212.7	237.4	(1.1)	264.5	303.2
Italy	119.6	198.6	236.7	(2.1)	282.9	326.5
Poland	113.4	187.9	223.1	(1.4)	265.4	309.1
Slovenia	119.2	182.5	221.3	(1.5)	263.3	305.3
Chile	121.5	175.2	214.0	(2.0)	250.2	299.0
Portugal	97.4	157.2	209.4	(5.6)	259.1	314.4
B. Document						
Sweden	213.2	274.0	303.1	(1.2)	338.6	377.2
Norway	200.6	267.4	293.8	(1.5)	328.0	361.9
Denmark	211.0	262.7	291.1	(0.9)	324.0	355.8
Finland	185.6	252.3	283.5	(1.0)	320.5	361.9
Germany	206.4	256.2	283.3	(1.0)	313.5	354.8
Netherlands	200.3	258.0	283.3	(0.9)	315.7	348.3
Czech Republic	191.3	248.2	279.5	(1.0)	314.7	355.9
Canada	121.5	243.6	275.7	(2.7)	322.7	374.9
Belgium (Flanders)	160.0	243.3	272.7	(1.3)	311.5	345.2
Australia	127.2	242.3	270.0	(1.2)	312.7	352.6
United States	124.7	233.4	268.9	(1.5)	318.2	361.2
New Zealand	152.1	238.1	267.3	(1.4)	305.7	348.1
Switzerland	117.4	240.7	266.0	(1.4)	309.1	348.1
United Kingdom	141.1	228.6	265.4	(2.1)	311.4	360.1
Average	**125.9**	**227.7**	**263.2**	**(0.8)**	**309.4**	**355.9**
Ireland	141.7	220.0	254.4	(4.1)	296.3	337.9
Hungary	144.7	212.5	243.7	(1.4)	278.1	325.3
Italy	106.7	193.6	231.5	(2.5)	278.3	315.8
Slovenia	105.2	179.8	223.0	(1.9)	272.1	317.3
Poland	84.4	174.6	217.6	(2.3)	269.3	320.8
Chile	114.2	176.8	212.4	(2.0)	249.0	293.8
Portugal	99.6	159.4	207.9	(5.7)	257.7	304.8

TABLE 5 (concluded)

Mean scores and scores at the 5th, 25th, 75th and 95th percentiles on a scale with range 0-500 points, prose, document, and quantitative literacy scales, population aged 26-65, 1994-1998

	5th percentile	25th percentile	Mean		75th percentile	95th percentile
C. Quantitative						
Sweden	214.4	276.2	304.9	(1.4)	340.7	380.5
Denmark	217.7	272.5	297.7	(0.8)	328.3	360.0
Czech Republic	203.3	266.6	296.5	(1.2)	332.6	373.4
Norway	210.8	270.7	296.0	(1.3)	327.7	361.6
Germany	216.0	266.6	292.6	(0.9)	323.9	360.0
Netherlands	200.3	261.4	285.9	(1.0)	317.1	352.2
Finland	193.6	256.5	283.5	(1.0)	316.4	351.7
Canada	144.2	245.5	280.2	(4.0)	325.3	382.2
United States	142.0	241.3	278.4	(1.4)	324.7	372.6
Belgium (Flanders)	154.3	242.6	277.3	(1.6)	320.8	362.8
Switzerland	141.6	251.4	276.2	(1.2)	314.1	350.9
Australia	135.6	244.6	274.7	(1.2)	317.8	358.0
Average	137.8	235.6	271.4	(0.8)	317.0	363.1
New Zealand	154.8	242.2	270.5	(1.5)	309.1	350.2
United Kingdom	147.0	229.9	267.6	(2.1)	314.8	358.9
Hungary	165.1	235.7	266.1	(1.5)	302.5	347.3
Ireland	144.7	220.9	260.6	(4.0)	305.3	355.0
Italy	114.3	204.7	242.5	(2.6)	289.5	331.1
Slovenia	112.7	190.5	235.1	(2.0)	285.5	333.8
Poland	103.5	188.9	230.9	(2.0)	282.3	329.8
Portugal	103.5	166.8	220.8	(5.8)	271.9	322.8
Chile	81.6	155.9	201.7	(2.7)	251.8	306.3

COUNTRIES ARE RANKED BY MEAN SCORES.

Source: International Adult Literacy Survey, 1994-1998.

TABLE 6

Scores at the 75th percentile on a scale with range 0-500 points, prose, document, and quantitative literacy scales, population aged 26-65, 1994-1998

	Prose	Document	Quantitative
Sweden	332.1	338.6	340.7
United States	323.2	318.2	324.7
Canada	321.7	322.7	325.3
Finland	317.0	320.5	316.4
Australia	315.4	312.7	317.8
Norway	313.6	328.0	327.7
New Zealand	311.3	305.7	309.1
Netherlands	310.2	315.7	317.1
United Kingdom	309.5	311.4	314.8
Average	**309.3**	**309.4**	**317.0**
Belgium (Flanders)	306.1	311.5	320.8
Germany	305.2	313.5	323.9
Ireland	301.5	296.3	305.3
Denmark	299.5	324.0	328.3
Switzerland	298.1	309.1	314.1
Czech Republic	294.6	314.7	332.6
Italy	282.9	278.3	289.5
Poland	265.4	269.3	282.3
Hungary	264.5	278.1	302.5
Slovenia	263.3	272.1	285.5
Portugal	259.1	257.7	271.9
Chile	250.2	249.0	251.8

COUNTRIES ARE RANKED BY PROSE SCORES.

Source: International Adult Literacy Survey, 1994-1998.

TABLE 7

Scores at the 25th percentile on a scale with range 0-500 points, prose, document, and quantitative literacy scales, population aged 26-65, 1994-1998

	Prose	Document	Quantitative
Sweden	270.1	274.0	276.2
Norway	264.2	267.4	270.7
Finland	254.8	252.3	256.5
Netherlands	253.6	258.0	261.4
Denmark	251.4	262.7	272.5
New Zealand	247.0	238.1	242.2
Germany	246.6	256.2	266.6
Canada	245.5	243.6	245.5
Australia	243.1	242.3	244.6
Czech Republic	241.9	248.2	266.6
United States	240.9	233.4	241.3
Switzerland	235.5	240.7	251.4
Belgium (Flanders)	235.0	243.3	242.6
United Kingdom	231.4	228.6	229.9
Average	229.3	227.7	235.6
Ireland	227.0	220.0	220.9
Hungary	212.7	212.5	235.7
Italy	198.6	193.6	204.7
Poland	187.9	174.6	188.9
Slovenia	182.5	179.8	190.5
Chile	175.2	176.8	155.9
Portugal	157.2	159.4	166.8

COUNTRIES ARE RANKED BY PROSE SCORES.

Source: International Adult Literacy Survey, 1994-1998.

TABLE 8

Inequality in the distribution of literacy (9th decile/1st decile) within countries for prose, document and quantitative scales, population aged 26-65, 1994-1998

	10th percentile	90th percentile	Literacy inequality
A. Prose			
Portugal	119.1	297.5	2.5
Poland	134.4	294.0	2.2
Slovenia	137.6	292.1	2.1
Italy	148.2	311.4	2.1
Chile	139.0	279.0	2.0
Average	179.8	338.9	1.9
United States	186.2	350.5	1.9
Canada	189.3	351.0	1.9
Switzerland	175.7	319.0	1.8
Australia	189.2	340.8	1.8
United Kingdom	187.9	334.4	1.8
Ireland	186.5	327.9	1.8
Belgium (Flanders)	189.2	329.4	1.7
New Zealand	203.5	336.1	1.7
Hungary	182.9	287.0	1.6
Finland	219.6	339.7	1.5
Germany	216.7	330.8	1.5
Sweden	234.1	356.1	1.5
Netherlands	222.1	330.8	1.5
Czech Republic	213.9	316.4	1.5
Norway	229.4	333.0	1.5
Denmark	224.6	315.3	1.4
B. Document			
Poland	103.5	299.4	2.9
Portugal	113.6	286.0	2.5
Slovenia	123.8	302.0	2.4
Italy	139.7	303.5	2.2
Chile	133.2	277.3	2.1
United States	170.4	346.5	2.0
Canada	177.3	352.8	2.0
Average	172.4	339.6	2.0
Switzerland	172.8	331.6	1.9
United Kingdom	183.3	342.7	1.9
Ireland	174.9	323.4	1.8
Australia	188.4	338.7	1.8
New Zealand	189.7	333.1	1.8
Hungary	175.7	304.5	1.7
Belgium (Flanders)	195.9	333.7	1.7
Finland	213.2	346.8	1.6
Czech Republic	214.8	340.5	1.6
Sweden	237.9	361.9	1.5
Norway	230.3	349.8	1.5
Netherlands	223.4	335.8	1.5
Denmark	229.7	345.2	1.5
Germany	227.9	339.5	1.5

TABLE 8 (concluded)

Inequality in the distribution of literacy (9th decile/1st decile) within countries for prose, document and quantitative scales, population aged 26-65, 1994-1998

	10th percentile	90th percentile	Literacy inequality
C. Quantitative			
Chile	101.9	288.2	2.8
Poland	121.0	311.0	2.6
Portugal	121.7	306.0	2.5
Slovenia	129.1	315.2	2.4
Italy	144.7	317.7	2.2
United States	183.0	355.0	1.9
Ireland	173.8	335.1	1.9
Average	179.7	346.2	1.9
United Kingdom	185.0	344.0	1.9
Canada	192.2	352.8	1.8
Australia	189.2	343.3	1.8
Switzerland	187.9	339.0	1.8
Belgium (Flanders)	194.9	347.0	1.8
New Zealand	194.4	334.9	1.7
Hungary	194.9	330.1	1.7
Czech Republic	230.2	358.8	1.6
Finland	221.0	339.4	1.5
Sweden	239.9	367.0	1.5
Netherlands	225.0	338.9	1.5
Norway	235.7	349.3	1.5
Denmark	238.4	349.7	1.5
Germany	236.6	345.8	1.5

COUNTRIES ARE RANKED BY LITERACY INEQUALITY.

Source: International Adult Literacy Survey, 1994-1998.

TABLE 9

Percent of population aged 45-65 at each prose, document and quantitative literacy level, 1994-1998

	Level 1	Level 2	Level 3	Level 4/5
A. Prose				
Chile	69.4 (2.7)	23.0 (2.0)	6.5 (1.0)	1.1 * (0.5)
Slovenia	62.3 (1.7)	27.2 (1.5)	9.7 (1.0)	0.8 * (0.3)
Poland	60.4 (1.3)	26.0 (1.1)	12.8 (1.2)	0.7 * (0.3)
Portugal	59.8 (3.7)	28.0 (3.9)	10.8 (2.0)	1.5 * (0.4)
Italy	54.0 (1.7)	26.1 (1.2)	17.0 (1.4)	2.9 (0.4)
Hungary	47.1 (1.4)	39.7 (1.8)	12.6 (1.0)	0.6 * (0.3)
Ireland	35.2 (3.4)	29.4 (2.2)	26.7 (2.3)	8.8 (1.9)
United Kingdom	29.6 (2.1)	32.3 (1.4)	27.3 (1.5)	10.8 (1.0)
Belgium (Flanders)	28.5 (2.3)	35.9 (2.1)	28.1 (2.0)	7.6 (1.0)
Average	**28.4 (0.7)**	**30.8 (0.8)**	**28.1 (0.9)**	**12.7 (0.8)**
Canada	27.0 (3.8)	26.6 (2.4)	28.6 (4.1)	17.8 (5.5)
Australia	26.0 (0.9)	29.1 (0.7)	30.9 (0.9)	14.0 (0.7)
Switzerland	24.4 (2.0)	41.8 (2.0)	29.7 (1.7)	4.1 (0.8)
Czech Republic	21.4 (1.3)	43.8 (1.7)	30.0 (1.5)	4.8 (0.7)
New Zealand	21.2 (1.8)	28.5 (1.6)	34.7 (1.9)	15.6 (1.5)
United States	20.0 (1.5)	27.5 (2.2)	31.7 (1.9)	20.8 (2.1)
Finland	20.0 (1.0)	36.9 (1.2)	32.9 (1.2)	10.1 (0.9)
Germany	18.2 (2.2)	40.2 (2.1)	33.7 (2.2)	7.9 (1.4)
Denmark	16.2 (1.1)	42.5 (1.5)	38.0 (1.5)	3.3 (0.6)
Netherlands	16.0 (1.4)	42.0 (1.8)	34.5 (1.6)	7.4 (0.8)
Norway	13.9 (1.0)	35.4 (1.6)	40.6 (1.7)	10.1 (1.2)
Sweden	11.5 (1.3)	26.6 (1.3)	38.5 (1.4)	23.4 (1.6)
B. Document				
Chile	65.6 (2.5)	27.3 (1.9)	6.5 (1.6)	0.5 * (0.3)
Portugal	62.9 (4.5)	27.8 (3.8)	8.0 (1.7)	1.3 * (0.3)
Poland	61.4 (1.8)	24.8 (1.5)	10.7 (1.3)	3.1 (0.4)
Slovenia	61.3 (1.8)	25.7 (1.6)	11.4 (1.3)	1.6 * (0.4)
Italy	52.6 (2.1)	29.0 (1.7)	15.8 (1.7)	2.5 (0.4)
Hungary	44.1 (1.8)	34.6 (1.7)	17.7 (1.7)	3.7 (0.8)
Ireland	39.0 (3.6)	29.6 (1.8)	24.0 (2.0)	7.5 (1.9)
United Kingdom	31.4 (2.1)	29.8 (1.5)	26.7 (1.7)	12.1 (0.9)
Canada	30.3 (4.6)	26.4 (2.5)	27.4 (4.1)	15.8 (3.6)
Average	**29.5 (0.8)**	**30.7 (0.7)**	**27.9 (0.6)**	**12.0 (0.6)**
Australia	26.7 (1.0)	29.8 (1.1)	31.4 (1.1)	12.1 (0.8)
New Zealand	26.6 (1.9)	32.5 (1.9)	27.7 (1.7)	13.1 (1.3)
Belgium (Flanders)	26.1 (2.5)	29.0 (1.6)	36.6 (2.2)	8.3 (1.1)
United States	24.5 (1.7)	29.7 (1.9)	30.1 (1.3)	15.8 (1.5)
Finland	22.9 (1.1)	33.6 (1.4)	31.1 (1.1)	12.5 (1.0)
Switzerland	21.9 (2.0)	36.1 (1.8)	34.1 (1.8)	7.9 (1.0)
Czech Republic	18.9 (1.3)	33.1 (1.6)	34.0 (1.4)	14.0 (1.0)
Netherlands	16.2 (1.3)	37.0 (1.7)	36.0 (1.7)	10.8 (0.9)
Norway	15.3 (1.2)	29.5 (2.0)	36.7 (1.6)	18.5 (1.7)
Denmark	14.3 (1.0)	32.3 (1.2)	37.6 (1.5)	15.8 (1.1)
Germany	12.8 (1.4)	37.6 (2.6)	37.5 (1.7)	12.1 (1.7)
Sweden	9.1 (1.0)	25.4 (1.4)	40.1 (1.5)	25.3 (1.4)

TABLE 9 (concluded)

Percent of population aged 45-65 at each prose, document and quantitative literacy level, 1994-1998

	Level 1	Level 2	Level 3	Level 4/5
C. Quantitative				
Chile	68.7 (2.6)	20.0 (1.7)	9.5 (2.2)	1.7 * (0.6)
Portugal	52.9 (4.7)	29.1 (3.8)	15.6 (2.5)	2.4 (0.5)
Poland	52.9 (1.6)	24.6 (1.8)	18.0 (0.8)	4.5 (0.5)
Slovenia	51.5 (1.9)	27.4 (1.6)	17.1 (1.2)	4.1 (0.6)
Italy	45.0 (2.3)	30.5 (1.5)	18.8 (1.7)	5.7 (0.7)
Ireland	37.4 (3.4)	24.7 (1.6)	24.2 (2.5)	13.7 (2.8)
Canada	29.5 (3.5)	26.3 (4.5)	25.5 (4.2)	18.6 (7.8)
United Kingdom	28.8 (1.8)	29.3 (1.7)	28.5 (1.9)	13.4 (1.0)
Hungary	27.8 (1.7)	33.5 (1.4)	27.6 (1.1)	11.1 (1.1)
Belgium (Flanders)	27.4 (2.7)	26.4 (1.6)	32.4 (2.3)	13.9 (1.2)
Average	**25.0** (0.7)	**28.0** (0.8)	**30.5** (0.7)	**16.5** (0.6)
Australia	24.4 (1.0)	27.6 (1.0)	32.3 (1.0)	15.7 (0.9)
New Zealand	22.9 (1.9)	30.7 (1.9)	31.3 (1.8)	15.0 (1.2)
United States	20.2 (1.5)	26.7 (1.9)	32.2 (1.6)	20.9 (1.6)
Finland	18.7 (1.0)	33.4 (1.4)	35.1 (1.6)	12.8 (1.1)
Switzerland	16.1 (1.5)	31.2 (2.1)	39.4 (2.1)	13.3 (1.3)
Netherlands	14.1 (1.4)	33.2 (1.7)	39.4 (1.6)	13.2 (0.9)
Czech Republic	11.9 (1.0)	25.0 (1.5)	36.1 (1.8)	26.9 (1.6)
Norway	11.2 (1.0)	27.2 (1.9)	38.9 (1.8)	22.7 (2.1)
Denmark	9.8 (0.9)	26.1 (1.4)	40.9 (1.8)	23.2 (1.2)
Germany	8.9 (1.0)	30.9 (2.4)	40.6 (1.9)	19.6 (1.7)
Sweden	8.8 (1.1)	22.6 (1.5)	39.3 (1.7)	29.3 (1.6)

COUNTRIES ARE RANKED BY THOSE AT LEVEL 1.

* Unreliable estimate

Source: International Adult Literacy Survey, 1994-1998

TABLE 10

Percent of native-born and second-language foreign-born[1] population aged 16-65 at each prose, document and quantitative literacy level, 1994-1998

	Level 1	Level 2	Level 3	Level 4/5
		A. Prose		
Poland				
Native-born	42.3 (0.8)	34.7 (0.9)	20.0 (0.7)	3.1 (0.3)
Second-language foreign-born	69.7 * (11.3)	30.3 * (11.3)	0.0 * (0.0)	0.0 * (0.0)
Switzerland				
Native-born	10.2 (0.7)	38.2 (1.3)	41.4 (1.0)	10.1 (0.7)
Second-language foreign-born	64.6 (1.9)	18.6 (1.9)	14.3 (1.7)	2.4 * (1.0)
United States				
Native-born	14.0 (0.8)	27.3 (1.3)	35.0 (1.4)	23.7 (1.2)
Second-language foreign-born	63.7 (2.4)	17.0 (1.7)	13.5 (2.1)	5.9 * (2.3)
Hungary				

Native-born	33.9	(1.0)	42.8	(1.4)	20.7	(1.0)	2.6	(0.5)
Second-language foreign-born	60.6	*	(36.0)	39.4	*	(36.0)	0.0	*
(0.0)								

TABLE 10 (continued)

Percent of native-born and second-language foreign-born[1] population aged 16-65 at each prose, document and quantitative literacy level, 1994-1998

	Level 1		Level 2		Level 3		Level 4/5	
				A. Prose				
Slovenia								
Native-born	40.9	(1.2)	35.0	(1.1)	20.9	(1.0)	3.2	(0.3)
Second-language foreign-born	59.8	(3.6)	28.2	(3.5)	10.3 *	(2.1)	1.8 *	(1.0)
Belgium (Flanders)								
Native-born	17.6	(1.6)	28.0	(2.3)	39.7	(2.6)	14.8	(1.1)
Second-language foreign-born	59.3 *	(10.5)	30.7 *	(11.1)	10.0 *	(4.8)	0.0 *	(0.0)
Average								
Native-born	19.9	(0.4)	30.2	(0.5)	33.4	(0.6)	16.5	(0.5)
Second-language foreign-born	57.3	(1.5)	21.3	(1.1)	15.7	(1.4)	5.8	(1.2)
United Kingdom								
Native-born	20.2	(0.8)	30.9	(1.3)	31.9	(1.1)	17.0	(0.8)
Second-language foreign-born	52.4	(7.1)	26.1	(4.4)	16.5	(5.4)	5.0 *	(2.1)
Australia								
Native-born	11.7	(0.5)	27.5	(0.7)	39.9	(0.7)	21.0	(0.6)
Second-language foreign-born	51.4	(1.9)	24.1	(1.6)	18.6	(1.7)	5.8	(0.8)
Canada								
Native-born	12.9	(0.9)	26.4	(2.5)	38.9	(2.3)	21.8	(1.6)
Second-language foreign-born	50.7	(6.9)	25.9	(6.4)	14.4	(8.4)	8.9 *	(2.4)
New Zealand								
Native-born	16.1	(1.2)	27.6	(1.3)	36.3	(1.1)	20.0	(0.8)
Second-language foreign-born	50.2	(4.3)	24.5	(3.2)	18.2	(3.0)	7.1 *	(2.1)
Denmark								
Native-born	9.3	(0.5)	36.4	(0.9)	47.8	(1.0)	6.5	(0.4)
Second-language foreign-born	46.2 *	(11.2)	25.6 *	(11.1)	25.2 *	(9.3)	3.0 *	(3.2)
Portugal								
Native-born	48.4	(2.0)	28.9	(2.3)	18.3	(1.3)	4.4	(0.5)
Second-language foreign-born	44.4 *	(31.6)	40.3 *	(24.1)	12.8 *	(8.3)	2.5 *	(2.9)
Germany								
Native-born	12.3	(0.9)	34.3	(1.2)	39.1	(1.4)	14.2	(1.0)
Second-language foreign-born	41.0	(4.3)	30.2	(4.6)	24.7 *	(4.2)	4.0 *	(2.7)
Finland								
Native-born	10.0	(0.5)	26.3	(0.7)	41.3	(0.7)	22.3	(0.6)
Second-language foreign-born	39.3 *	(7.6)	28.7 *	(6.7)	26.8 *	(6.2)	5.3 *	(3.8)
Netherlands								

Native-born	9.1	(0.6)	29.9	(1.0)	45.0	(1.1)	16.0	(0.7)
Second-language foreign-born	38.7		36.9		23.1	*	1.3	*
	(6.2)		(6.3)		(5.8)		(0.9)	
Italy								
Native-born	34.7	(1.2)	30.6	(1.1)	26.7	(1.2)	8.0	(0.5)
Second-language foreign-born	37.4	*	50.3	*	8.0	*	4.2	*
	(8.8)		(7.2)		(4.9)		(4.4)	
Sweden								
Native-born	5.1	(0.4)	20.1	(0.4)	40.4	(0.8)	34.3	(0.6)
Second-language foreign-born	34.4		22.1		32.6		10.9	*
	(5.1)		(4.0)		(3.9)		(2.4)	

TABLE 10 (continued)

Percent of native-born and second-language foreign-born[1] population aged 16-65 at each prose, document and quantitative literacy level, 1994-1998

	Level 1		Level 2		Level 3		Level 4/5	
				A. Prose				
Norway								
Native-born	7.1	(0.5)	25.2	(1.1)	50.3	(1.1)	17.4	(0.8)
Second-language foreign-born	33.8	(3.5)	18.9	(5.4)	30.0	(4.4)	17.3	
Chile								
Native-born	50.3	(1.7)	35.0	(1.2)	13.1	(1.2)	1.6	(0.5)
Second-language foreign-born	33.1	(0.0) *	55.7	(44.5) *	11.2	(54.5) *	0.0	(15.6) *
Czech Republic								
Native-born	15.5	(0.5)	38.0	(1.0)	38.1	(0.9)	8.4	(0.5)
Second-language foreign-born	31.9	(6.0) *	42.9	(9.7) *	16.0	(9.9) *	9.1	(6.3) *
Ireland								
Native-born	23.0	(1.4)	29.6	(1.6)	33.8	(1.3)	13.7	(1.4)
Second-language foreign-born	9.4	(10.5) *	26.4	(7.3) *	52.1	(11.4) *	12.1	(11.5) *
				B. Document				
Slovenia								
Native-born	39.0	(1.2)	32.7	(1.0)	22.8	(1.0)	5.6	(0.5)
Second-language foreign-born	64.0	(0.8)	21.5	(2.8)	13.4	(2.5)	1.1	(2.4) *
Switzerland								
Native-born	9.1	(0.8)	30.8	(1.1)	42.1	(0.7)	18.0	(0.9)
Second-language foreign-born	63.0	(0.9)	19.5	(3.3)	13.4	(2.5)	4.1	(1.9)
United States								
Native-born	17.5	(1.1)	27.4	(1.2)	34.0	(1.2)	21.2	(1.0)
Second-language foreign-born	61.5	(1.8)	18.8	(2.5)	14.2	(2.1)	5.4	(1.8) *
Hungary								
Native-born	32.9	(0.9)	34.3	(1.0)	24.9	(1.0)	8.0	(0.7)
Second-language foreign-born	60.6	(33.3) *	0.0	(36.0) *	13.3	(0.0) *	26.2	(18.3) *
Belgium (Flanders)								
Native-born	14.5	(1.8)	24.0	(3.2)	44.0	(4.5)	17.6	(1.0)
Second-language foreign-born	59.0	(3.6) *	30.5	(10.1) *	6.5	(8.8) *	4.0	(3.5) *
Portugal								
Native-born	49.4	(2.5)	30.7	(2.3)	16.7	(0.9)	3.2	(0.4)
Second-language foreign-born	55.3	(0.0) *	40.8	(26.7) *	3.9	(24.8) *	0.0	(2.9) *
Italy								
Native-born	36.6	1.322	32.1	1.16	25.4	0.975	5.9	0.473
Second-language foreign-born	55.0	5.075 *	26.2	11.782 *	11.6	10.771 *	7.2	6.781 *

Poland								
Native-born	45.0	(1.3)	30.8	(1.0)	18.3	(0.7)	5.9	(0.3)
Second-language foreign-born	54.7	*	(20.5)	45.3	*	(20.5)	0.0	*
(0.0)							0.0	*
Average								
Native-born	21.1	(0.4)	28.9	(0.4)	32.7	(0.5)	17.4	(0.4)
Second-language foreign-born	53.6		(1.3)	22.5		(1.6)	16.3	
(1.0)							7.6	
United Kingdom								
Native-born	21.5	(0.8)	27.6	(1.0)	31.4	(0.9)	19.4	(1.0)
Second-language foreign-born	53.3		(7.2)	21.9		(3.7)	14.5	
(3.2)							(4.6)	10.3 *

TABLE 10 (continued)

Percent of native-born and second-language foreign-born[1] population aged 16-65 at each prose, document and quantitative literacy level, 1994-1998

	Level 1		Level 2		Level 3		Level 4/5	
				B. Prose				
New Zealand								
Native-born	19.8	(1.1)	29.8	(1.3)	32.7	(1.1)	17.7	(1.0)
Second-language foreign-born	48.6	(2.0)	23.4	(3.7)	20.3	(3.5)	7.7	(3.2) *
Australia								
Native-born	12.3	(0.5)	28.7	(0.7)	39.9	(0.8)	19.0	(0.7)
Second-language foreign-born	47.7	(0.8)	21.6	(2.0)	24.7	(1.7)	5.9	(1.9)
Canada								
Native-born	14.8	(1.4)	25.6	(1.9)	35.4	(2.0)	24.2	(2.0)
Second-language foreign-born	47.5	(10.0)	27.2	(5.9)	9.4	(5.2) *	15.9	(3.1) *
Finland								
Native-born	12.3	(0.5)	24.1	(0.9)	38.3	(0.9)	25.3	(0.6)
Second-language foreign-born	39.4	(4.6) *	26.2	(7.1) *	26.4	(6.2) *	8.0	(7.2) *
Netherlands								
Native-born	8.9	(0.6)	25.4	(0.8)	45.2	(1.0)	20.5	(0.8)
Second-language foreign-born	33.2	(2.9)	31.7	(6.1)	27.5	(6.3)	7.5	(6.4) *
Chile								
Native-born	51.7	(1.7)	35.4	(1.0)	11.6	(0.8)	1.3	(0.5)
Second-language foreign-born	33.1	(0.0) *	0.0	(44.5) *	66.9	(0.0) *	0.0	(44.5) *
Denmark								
Native-born	7.6	(0.5)	24.2	(0.8)	42.7	(0.9)	25.5	(0.7)
Second-language foreign-born	32.2	(5.4) *	30.4	(0.9) *	28.2	(11.4) *	9.3	(9.9) *
Norway								
Native-born	7.6	(0.6)	21.1	(1.0)	41.9	(1.0)	29.4	(1.2)
Second-language foreign-born	27.1	(3.7)	21.1	(3.2)	26.7	(2.6)	25.1	(3.1)
Czech Republic								
Native-born	14.1	(0.8)	27.9	(1.0)	38.4	(0.9)	19.6	(0.7)
Second-language foreign-born	26.6	(5.2) *	39.9	(9.9) *	24.9	(8.6) *	8.6	(10.8) *
Sweden								
Native-born	4.3	(0.2)	18.0	(0.9)	40.3	(0.8)	37.3	(0.6)
Second-language foreign-born	26.6	(2.6)	27.6	(4.3)	32.0	(4.2)	13.7	(4.2) *
Germany								
Native-born	7.8	(0.7)	32.1	(1.3)	40.7	(1.2)	19.4	(0.8)
Second-language foreign-born	23.3	(4.3) *	37.4	(2.9)	26.6	(5.6)	12.7	(4.8) *
Ireland								

Native-born	26.0	(1.7)	31.7	(1.2)	31.3	(1.4)	11.0	(1.3)	
Second-language foreign-born	9.4	*	(7.3)	24.2	*	(13.1)	41.3	*	(12.4) 25.1 * (11.4)

TABLE 10 (continued)

Percent of native-born and second-language foreign-born[1] population aged 16-65 at each prose, document and quantitative literacy level, 1994-1998

	Level 1		Level 2		Level 3		Level 4/5	
				C. Quantitative				
United States								
Native-born	14.9	(1.0)	26.7	(1.2)	33.4	(0.8)	24.9	(1.1)
Second-language foreign-born	60.6	(1.3)	15.1	(2.3)	17.3	(1.8)	7.0	(1.9)
Portugal								
Native-born	41.6	(2.1)	30.4	(1.8)	22.9	(1.4)	5.1	(0.6)
Second-language foreign-born	58.2	(2.4) *	32.3	(25.4) *	6.8	(20.0) *	2.7	(5.1) *
Switzerland								
Native-born	6.1	(0.5)	26.5	(1.2)	45.9	(1.5)	21.5	(1.4)
Second-language foreign-born	56.1	(1.2)	20.5	(2.1)	18.1	(2.1)	5.3	(1.3)
Slovenia								
Native-born	33.4	(1.2)	30.4	(1.0)	27.2	(1.1)	8.9	(0.6)
Second-language foreign-born	54.8	(1.6)	27.4	(3.2)	13.7	(4.0)	4.1	(2.6) *
Poland								
Native-born	38.7	(1.0)	30.2	(1.1)	24.1	(0.6)	7.0	(0.5)
Second-language foreign-born	54.7	(0.0) *	35.3	(20.5) *	10.0	(19.9) *	0.0	(11.1) *
United Kingdom								
Native-born	21.7	(0.7)	28.0	(1.1)	31.4	(0.9)	18.9	(1.1)
Second-language foreign-born	54.0	(2.6)	18.8	(7.0)	18.5	(3.2)	8.7	(5.5) *
Average								
Native-born	18.6	(0.4)	27.3	(0.5)	34.0	(0.4)	20.1	(0.4)
Second-language foreign-born	51.9	(0.9)	20.3	(1.4)	19.2	(1.6)	8.5	(1.6)
New Zealand								
Native-born	19.3	(1.2)	29.6	(1.4)	33.6	(1.0)	17.5	(1.0)
Second-language foreign-born	46.3	(1.9)	22.8	(3.9)	24.0	(3.7)	6.9	(3.4) *
Canada								
Native-born	13.8	(1.2)	28.2	(1.9)	37.4	(2.7)	20.6	(1.7)
Second-language foreign-born	44.7	(5.8)	24.4	(7.5)	19.5	(10.2)	11.4	(8.9) *
Australia								
Native-born	12.6	(0.5)	27.5	(0.8)	39.4	(0.7)	20.5	(0.7)
Second-language foreign-born	44.5	(0.9)	21.0	(2.0)	27.2	(1.6)	7.3	(1.7)
Belgium (Flanders)								
Native-born	16.1	(1.8)	22.6	(1.9)	38.4	(2.3)	22.9	(1.3)
Second-language foreign-born	44.3	(4.9) *	34.7	(10.2) *	10.3	(10.8) *	10.8	(5.3) *
Italy								

Native-born	32.1	(1.5)	31.2	(1.1)	27.7	(1.2)	8.9	(0.6)
Second-language foreign-born	40.9	*	(10.5)	42.4	*	(9.2)	11.4	*
(4.4)							(6.2)	5.3 *
Czech Republic								
Native-born	8.5	(0.5)	22.3	(1.0)	37.1	(1.0)	32.1	(1.0)
Second-language foreign-born	39.6	*	(8.2)	23.6	*	(11.7)	29.9	*
(5.5)							(11.9)	6.9 *
Netherlands								
Native-born	8.9	(0.6)	25.3	(1.0)	45.5	(1.1)	20.4	(0.8)
Second-language foreign-born	37.3		(6.1)	30.7		(6.2)	22.2	*
(3.0)							(5.1)	9.8 *

TABLE 10 (concluded)

Percent of native-born and second-language foreign-born[1] population aged 16-65 at each prose, document and quantitative literacy level, 1994-1998

	Level 1		Level 2		Level 3		Level 4/5	
				C. Quantitative				
Finland								
Native-born	10.7	(0.5)	27.3	(0.8)	42.2	(0.8)	19.8	(0.6)
Second-language foreign-born	36.8	*	(7.8)	18.6	*	(5.9)	34.3	*
(4.8)								
							10.3	*
Chile								
Native-born	56.7	(1.7)	26.7	(1.0)	14.1	(1.5)	2.5	(0.4)
Second-language foreign-born	33.1	*	(44.5)	0.0	*	(0.0)	11.2	*
(54.5)							(15.6)	55.7 *
Denmark								
Native-born	6.1	(0.4)	21.4	(0.8)	44.0	(1.2)	28.5	(0.9)
Second-language foreign-born	26.7	*	(8.3)	34.9	*	(9.4)	27.8	*
(6.5)							(7.3)	10.6 *
Sweden								
Native-born	4.8	(0.3)	17.9	(0.7)	39.9	(1.2)	37.4	(0.9)
Second-language foreign-born	25.9		(4.4)	25.8		(2.3)	30.7	
(2.7)							(4.7)	17.6
Norway								
Native-born	6.8	(0.5)	22.2	(1.0)	43.6	(1.4)	27.4	(1.2)
Second-language foreign-born	23.1		(3.6)	19.2		(2.7)	31.4	
(3.7)							(4.2)	26.3
Germany								
Native-born	5.8	(0.5)	25.4	(1.1)	44.7	(1.1)	24.2	(0.6)
Second-language foreign-born	19.4	*	(3.9)	41.0		(5.7)	24.4	*
(3.9)							(4.2)	15.2 *
Ireland								
Native-born	25.4	(1.5)	28.0	(1.0)	30.6	(1.1)	16.0	(1.7)
Second-language foreign-born	9.4	*	(7.3)	32.1	*	(12.7)	46.5	*
(9.8)							(7.7)	12.0 *
Hungary								
Native-born	20.5	(1.0)	31.5	(1.0)	31.8	(1.0)	16.2	(0.9)
Second-language foreign-born	0.0	*	(0.0)	100.0	*	(0.0)	0.0	*
(0.0)							(0.0)	0.0 *

COUNTRIES ARE RANKED BY SECOND-LANGUAGE FOREIGN-BORN PERSONS AT LEVEL 1.

* Unreliable estimate

1 Foreign-born persons whose mother tongue is the same as the language of test are excluded.

Note: Belgium (Flanders), Chile, Czech Republic, Denmark, Finland, Hungary, Ireland, Italy, Poland and Portugal are excluded from Figure 10 because the data are unreliable.

Source: International Adult Literacy Survey, 1994-1998.

ANNEX B

Data Sources and Methodology

The IALS represented a first attempt at undertaking a large-scale household-based assessment of adult literacy skills at the international level. It was conducted as a household survey that covered the civilian, non-institutionalized population aged 16-65. Data collection for the IALS project took place between 1994 and 1998, depending on which of the survey cycles a country participated.[17]

Countries were encouraged to field sample sizes large enough to yield 3,000 completed cases after non-response, so that secondary analysis and estimates of literacy profiles could be obtained reliably. Although the common target population was people aged 16–65, individual countries were free to sample younger or older adults. Canada, Sweden and Switzerland sampled persons at least 16 years of age but with no upper limit, while the Netherlands sampled persons aged 16 to 74, and Australia sampled those aged 15 to 74. Chile also took this opportunity, including young adults 15 years of age.

During the development stage of the survey, countries were provided with a "master" English-language version of the background questionnaire and task booklets. With respect to the background questionnaire, the master copy clearly indicated which questions were optional or mandatory and whether and how countries could adapt response categories to country-specific needs. Moreover, as a result of the pilot test, any items that failed the study's standards for psychometric equivalence were identified and countries requested to verify possible translation, adaptation or scoring problems. With this additional information in hand the countries were able to further improve the adaptations and translations of their instruments.

Each respondent completed the questionnaire and took the test, of approximately one-hour in duration, during a personal interview. These interviews and tests were conducted in people's homes in a neutral, non-pressuring manner. Interviewer training and supervision was to be provided, emphasizing the selection of one person per household (if applicable), the selection of one of the seven main task booklets (if applicable), the scoring of the core task booklet, and the assignment of status codes.

The background questionnaire contained a range of questions concerning, for example, the respondent's demographic characteristics, family background, labor force status, reading habits at work and at home, participation in adult education and training, and self-reports on literacy ability.

Table B.1 gives, for each country, information about the test language(s) used, the size of the target population and the number of survey respondents.

TABLE B.1

Test language, target population size and number of survey respondents

Country	Test language	Population aged 16-65	Survey respondents aged 16-65
Australia	English	11,900,000	8,204
Belgium (Flanders)	Dutch	4,500,000	2,261
Canada	English	13,700,000	3,130
	French	4,800,000	1,370
Chile	Spanish	9,400,000	3,502
Czech Republic	Czech	7,100,000	3,132
Denmark	Danish	3,400,000	3,026
Finland	Finnish	3,200,000	2,928
Germany	German	53,800,000	2,062
Hungary	Hungarian	7,000,000	2,593
Ireland	English	2,200,000	2,423
Italy	Italian	38,700,000	2,974
Netherlands	Dutch	10,500,000	2,837
New Zealand	English	2,100,000	4,223
Norway	Bokmål	2,800,000	3,307
Poland	Polish	24,500,000	3,000
Portugal	Portuguese	6,700,000	1,239
Slovenia	Slovenian	1,400,000	2,972
Sweden	Swedish	5,400,000	2,645
Switzerland	French	1,000,000	1,435
	German	3,000,000	1,393
	Italian	200,000	1,302
United Kingdom	English	37,000,000	6,718
United States*	English	161,100,000	3,053

* Four indicators in Chapter 1 employ 1992 NALS data for the U.S. These estimates are based on 4853 survey respondents aged 16-25.

Once the background questionnaire had been completed, the interviewer presented a booklet containing six simple tasks. Respondents who were able to answer at least two of the six questions contained in the screener test designed to identify very low-literate individuals correctly were given a much larger variety of tasks, drawn from a pool of 114 items, in a separate booklet. Each booklet contained about 45 items. These tests were not timed and respondents were urged to try each exercise in their booklet. Respondents were given maximum leeway to demonstrate their skill levels, even if their measured skills were minimal.

The definition of an IALS respondent is a person who has fully or partially completed the background questionnaire. With this information, as well as the reason why the tasks booklet was not completed, it was possible to impute a literacy profile (given a sufficient number of complete responses). Thus the IALS procedures stressed that at a minimum the background questionnaire should be completed by every person sampled.

Several precautions were taken to ensure that response rates would be adequate. Low response rates are of concern in any survey because non-response might result in biased estimates. Interviewers were instructed to return several times to non-responding households in order to obtain as many responses as possible. In addition, all sample designs included some over-sampling. This refers to the inclusion in a sample of more randomly selected households than are necessary for the required number of completed interviews, to ensure a sufficient number of responses. Finally, the IALS sampling guidelines included an adjustment during the weighting procedure to help correct for non-response bias. This correction, known as post-stratification, adjusts the population weights so that they match known population counts, e.g. by gender, age group or education level. All countries post-stratified their data to such counts. Table B.2 presents the response rates achieved by the participating countries.

TABLE B.2

Response rates by country

Country	Age range	Number of respondents	Response rate (percent)
Australia	15-74	9,302	96
Belgium (Flanders)	16-65	2,261	36
Canada	16+	5,660	69
Chile	15-65	3,583	74
Czech Republic	16-65	3,132	62
Denmark	16-65	3,026	66
Finland	16-65	2,928	69
Germany	16-65	2,062	69
Hungary	16-65	2,593	52
Ireland	16-65	2,423	60
Italy*	16-65	2,974	33*
Netherlands	16-74	3,090	45
New Zealand	16-65	4,223	74
Norway	16-65	3,307	61
Poland*	16-65	3,000	75*
Portugal*	16-65	1,239	60
Slovenia	16-65	2,972	70
Sweden	16+	3,038	60
Switzerland	16+	4,302	53
United Kingdom	16-65	6,718	63
United States	16-65	3,053	60

* The response rate for Poland includes only the first wave of sampled persons, before interviewer follow-up. The response rate for Italy is low but the achieved sample matches known population counts. Portugal conducted its literacy survey as part of an European Union sponsored research study undertaken independently of the IALS project but using a similar methodology and equivalent test instruments. Care must be taken when performing more complex data analyses because the number of completed cases is comparatively low.

The response rates realized in IALS are generally lower than those obtained in international surveys of student achievement, in which data are collected from samples of schools, classrooms and students.[18] In several countries with low, response rates, follow-up surveys were conducted in order to determine the presence of bias. No evidence of serious bias was found in the countries investigated.

Subsequent to the data collection, the responses were scored and codes entered onto a highly structured international record layout file. Persons charged with scoring in each country received intense training in scoring responses to the open-ended items using the IALS Scoring Manual. To further ensure accuracy, countries were monitored as to the quality of their scoring in two ways. First, within a country, at least 20 per cent of the tests had to be re-scored. Second, each country had 10 per cent of its sample re-scored by scorers from another country. Further, as a condition for their participation in the IALS, countries were required to capture and process their files using procedures that ensured logical consistency and acceptable levels of data capture error. Specifically, countries were advised to conduct complete verification of the captured scores (i.e., enter each record twice) in order to minimize error rates. Because the process of accurately capturing the test scores is essential to high data quality, 100 per cent keystroke validation was needed.

Once the quality control team at Statistics Canada was satisfied that the data files were indeed clean and of high quality, the records were handed over to ETS for scaling. The test results were analyzed using three scales – prose, document and quantitative – rather than a single scale. Each scale had a range from 0 to 500. As mentioned in the Introduction, the scale scores were, in turn, grouped into five empirically determined literacy levels.

The Item Response Theory (IRT) scaling procedures that were applied in IALS constituted a statistical solution to the challenge of establishing one or more literacy scales for a set of tasks with an ordering of difficulty that would essentially be the same for everyone. The scale point assigned to each task was the point at which individuals with that proficiency score would have a given probability of responding correctly. In IALS, an 80 per cent probability of correct response was the criterion used. This meant that individuals estimated to have a particular scale score performed tasks at that point on the scale with an 80 per cent probability of a correct response. It also meant they would have a greater than 80 per cent chance of performing tasks that were lower on the scale. While some of the tasks were at the low end of a scale and some at the very high end, most had values in the range 200-400. It is important to recognize that the ranges were selected not as a result of any inherent statistical property of the scales, but rather as the result of shifts in the skills and strategies required to succeed at various tasks along the scales, ranging from simple to complex.

The primary goal of the IALS was to generate valid, reliable and comparable profiles of adult literacy skill both within and between countries, a challenge never before attempted. The IALS study also set a number of scientific goals, many of which were related to containing measurement error to acceptable levels in a previously untried combination of educational assessment and household survey research.

The findings presented in this monograph leave little question that the study has produced a wealth of data of importance to public policy, a fact that has whetted the appetite of policy makers for more. As with any new measurement technology, however, much room remains for improvement. In each successive round of collection, quality assurance procedures have been enhanced and extended in response to identified problems.[19] A recent review of IALS methods, conducted on behalf of the European Union by the National Office for Statistics of the United Kingdom, concluded that the quality and comparability of IALS estimates in each successive round of collection had improved as a direct result of these measures.[20] The same report points, however, to a need for continued development through international collaboration related to the design, implementation and analysis of data."

ANNEX C

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Annex d

About the Author

Albert Tuijnman received a Ph.D. from the Institute of International Education, Stockholm University in 1989 and was with the Faculty of Education, University of Twente, before joining the Organisation for Economic Co-operation and Development in 1992. There he helped produce the first editions of *Education at a Glance: OECD Indicators*, the comparative reports presenting the results of the *International Adult Literacy Survey*, and the documentation on *Lifelong Learning for All* for the 1996 Ministerial. He is currently Professor of Education at Stockholm University. His fields of interest are comparative education, education economics, and adult education and training.

7 Values for the United States youth population are derived from the 1992 U.S. National Adult Literacy Survey (NALS) because a sampling anomaly involving students residing on college campus limits the international comparability of U.S. IALS data for this age cohort. The 1992 NALS data are fully compatible with the 1994 IALS data set because special care was taken by the Educational Testing Service to properly link the scales used for the two surveys.

8 On average, people increase their literacy scores on the IALS test by about 10 points for each additional year they attend school or college.

9 The prose literacy scale is chosen because it is the one used by the National Education Goals Panel for benchmarking progress in reaching National Goal 6: *Adult Literacy and Life-long Learning*.

10 The indicators for the young population are generally based on small sample sizes. Consequently, the standard errors of the estimates tend to be large. As a result many of the differences between population groups are not statistically significant.

11 NCES data. See also OECD (2000), *Education at a Glance*, Paris, and National Education Goals Panel (1999), *National Education Goals Report 1999*, Washington, DC.

12 The index values are obtained by dividing population mean scores at the 9th and 1st deciles.

13 See OECD and Statistics Canada (2000), *Literacy in the Information Age: Final Report of the International Adult Literacy Survey*, Paris and Ottawa.

14 Some estimates for Portugal and Italy are unreliable because they are based on small sample sizes. This is also the case for Ireland and some other countries that have relatively small second-language immigrant populations. See flags in Table 10 in Annex A.

15 Switzerland undertook separate surveys of its German-, French- and Italian-speaking populations.

16 In OECD and Statistics Canada (2000), results are presented of a multivariate analysis across 20 countries of factors that are associated with literacy proficiency. The purpose of that analysis was to find out, first, how much of the variance in literacy performance could be explained by the predictor variables in each country, and second, how much of that explained variance could be attributed to each of the predictors while holding the other factors constant.

17 The survey description provided in this annex draws on material from the IALS international reports published previously by OECD and Statistics Canada (1995 and 2000), see references in Annex C.

18 The Third International Mathematics and Science Study (TIMSS), for example, that was conducted at three grade levels in 41 countries under the auspices of the International Association for the Evaluation of Educational Achievement (IEA) during the 1995 school year.

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